feasiblecharpolylist[41, (x + 5) ^ 25 (x - 7) ^ 3]

$$\Big\{(-13+x)\,(-9+x)^3\,(-8+x)\,(-7+x)^8,\ (-9+x)^3\,(-7+x)^7\,\left(-724+251\,x-28\,x^2+x^3\right),$$
$$(-9+x)^2\,(-7+x)^8\,\left(-932+293\,x-30\,x^2+x^3\right),$$
$$(-9+x)^3\,(-8+x)\,(-7+x)^6\,\left(-629+231\,x-27\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^7\,\left(80-19\,x+x^2\right),\ (-9+x)^2\,(-8+x)\,(-7+x)^7\,\left(-811+271\,x-29\,x^2+x^3\right),$$
$$(-9+x)^2\,(-7+x)^8\,\left(-928+293\,x-30\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)\,(-8+x)\,(-7+x)^8\,\left(95-20\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^6\,\left(-556+213\,x-26\,x^2+x^3\right),$$
$$(-9+x)^3\,(-7+x)^7\,\left(-716+251\,x-28\,x^2+x^3\right),$$
$$(-9+x)^2\,(-7+x)^7\,\left(6452-2975\,x+503\,x^2-37\,x^3+x^4\right),$$
$$(-9+x)^2\,(-7+x)^7\,\left(95-20\,x+x^2\right)\,\left(68-17\,x+x^2\right),$$
$$(-12+x)\,(-11+x)\,(-9+x)^2\,(-7+x)^9,\ (-9+x)^4\,(-8+x)\,(-7+x)^6\,\left(69-18\,x+x^2\right),$$
$$(-9+x)^3\,(-7+x)^6\,\left(4976-2469\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-9+x)^3\,(-7+x)^7\,\left(-712+251\,x-28\,x^2+x^3\right),$$
$$(-9+x)^2\,(-8+x)\,(-7+x)^6\,\left(95-20\,x+x^2\right)\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^2\,(-7+x)^7\,\left(6416-2971\,x+503\,x^2-37\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^2\,(-8+x)\,(-7+x)^7\,\left(73-18\,x+x^2\right),$$
$$(-11+x)\,(-9+x)\,(-7+x)^8\,\left(-752+255\,x-28\,x^2+x^3\right),$$
$$(-11+x)^3\,(-8+x)\,(-7+x)^9,\ (-9+x)^4\,(-7+x)^6\,\left(-548+213\,x-26\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^5\,\left(3844-2039\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^3\,(-7+x)^6\,\left(95-20\,x+x^2\right)\,\left(52-15\,x+x^2\right),$$
$$(-9+x)^3\,(-7+x)^6\,\left(4948-2465\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-12+x)\,(-9+x)^3\,(-7+x)^7\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^2\,(-7+x)^6\,\left(-44\,588+27\,141\,x-6488\,x^2+762\,x^3-44\,x^4+x^5\right),$$
$$(-9+x)^3\,(-7+x)^6\,\left(73-18\,x+x^2\right)\,\left(68-17\,x+x^2\right),$$
$$(-11+x)\,(-9+x)^2\,(-7+x)^7\,\left(-580+217\,x-26\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)\,(-7+x)^7\,\left(5228-2533\,x+451\,x^2-35\,x^3+x^4\right),$$
$$(-11+x)^2\,(-9+x)\,(-7+x)^8\,\left(68-17\,x+x^2\right),$$
$$(-9+x)^4\,(-8+x)\,(-7+x)^5\,(-5+x)\,\left(95-20\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^6\,\left(-544+213\,x-26\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^5\,\left(-424+179\,x-24\,x^2+x^3\right),$$
$$(-9+x)^3\,(-8+x)\,(-7+x)^6\,\left(-613+231\,x-27\,x^2+x^3\right),$$
$$(-9+x)^3\,(-7+x)^5\,\left(-34\,400+22\,139\,x-5590\,x^2+692\,x^3-42\,x^4+x^5\right),$$
$$(-9+x)^3\,(-7+x)^6\,\left(4912-2461\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-9+x)^3\,(-8+x)\,(-7+x)^5\,\left(73-18\,x+x^2\right)\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^3\,(-7+x)^6\,\left(4920-2461\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^2\,(-8+x)\,(-7+x)^6\,\left(-503+199\,x-25\,x^2+x^3\right),$$
$$(-9+x)^2\,(-7+x)^6\,\left(59-16\,x+x^2\right)\,\left(-752+255\,x-28\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)^3\,(-7+x)^7\,\left(64-17\,x+x^2\right),$$
$$(-11+x)^2\,(-9+x)\,(-8+x)\,(-7+x)^7\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^5\,\left(3772-2031\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-12+x)\,(-9+x)^5\,(-7+x)^6\,(-5+x),$$

$$(-9+x)^4\,(-7+x)^5\,\left(3788-2031\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^3\,(-7+x)^6\,\left(4868-2457\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^5\,\left(73-18\,x+x^2\right)\,\left(52-15\,x+x^2\right),$$
$$(-9+x)^3\,(-7+x)^5\,\left(-34\,148+22\,075\,x-5586\,x^2+692\,x^3-42\,x^4+x^5\right),$$
$$(-9+x)^3\,(-7+x)^6\,\left(4876-2457\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-9+x)^3\,(-7+x)^5\,\left(59-16\,x+x^2\right)\,\left(-580+217\,x-26\,x^2+x^3\right),$$
$$(-9+x)^3\,(-7+x)^5\,\left(68-17\,x+x^2\right)\,\left(-503+199\,x-25\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)^3\,(-7+x)^6\,\left(-444+183\,x-24\,x^2+x^3\right),$$
$$(-9+x)^2\,(-7+x)^5\,\left(59-16\,x+x^2\right)\,\left(5228-2533\,x+451\,x^2-35\,x^3+x^4\right),$$
$$(-11+x)^2\,(-9+x)^2\,(-7+x)^7\,\left(52-15\,x+x^2\right),$$
$$(-11+x)\,(-9+x)^2\,(-7+x)^6\,\left(68-17\,x+x^2\right)\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^4\,(-8+x)\,(-7+x)^5\,\left(-467+195\,x-25\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^5\,\left(-416+179\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-8+x)\,(-7+x)^4\,(-5+x)\,\left(73-18\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^6\,\left(-536+213\,x-26\,x^2+x^3\right),$$
$$(-9+x)^3\,(-8+x)\,(-7+x)^5\,\left(4219-2222\,x+420\,x^2-34\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^4\,\left(-26\,336+17\,949\,x-4792\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-9+x)^4\,(-7+x)^5\,(-5+x)\,\left(-752+255\,x-28\,x^2+x^3\right),$$
$$(-9+x)^3\,(-7+x)^6\,\left(4832-2453\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^5\,\left(3768-2027\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^3\,(-8+x)\,(-7+x)^4\,\left(59-16\,x+x^2\right)\,\left(-503+199\,x-25\,x^2+x^3\right),$$
$$(-9+x)^3\,(-7+x)^5\,\left(-33\,896+22\,011\,x-5582\,x^2+692\,x^3-42\,x^4+x^5\right),$$
$$(-11+x)^2\,(-9+x)^3\,(-8+x)\,(-7+x)^6\,(-5+x),$$
$$(-9+x)^4\,(-7+x)^5\,\left(64-17\,x+x^2\right)\,\left(59-16\,x+x^2\right),$$
$$(-11+x)\,(-9+x)^3\,(-7+x)^5\,\left(3088-1721\,x+351\,x^2-31\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^2\,(-7+x)^6\,\left(3968-2087\,x+399\,x^2-33\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^2\,(-8+x)\,(-7+x)^5\,\left(59-16\,x+x^2\right)^2,$$
$$(-9+x)^5\,(-7+x)^5\,\left(-412+179\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^4\,\left(2892-1665\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^5\,\left(3716-2023\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^4\,(-5+x)\,\left(-580+217\,x-26\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^4\,\left(-26\,084+17\,885\,x-4788\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-9+x)^4\,(-7+x)^6\,\left(-532+213\,x-26\,x^2+x^3\right),$$
$$(-9+x)^3\,(-7+x)^5\,\left(-33\,500+21\,931\,x-5578\,x^2+692\,x^3-42\,x^4+x^5\right),$$
$$(-9+x)^4\,(-7+x)^4\,\left(52-15\,x+x^2\right)\,\left(-503+199\,x-25\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^4\,(-5+x)\,\left(5228-2533\,x+451\,x^2-35\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^5\,\left(3732-2023\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^3\,(-7+x)^6\,\left(-436+183\,x-24\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^4\,\left(59-16\,x+x^2\right)\,\left(-444+183\,x-24\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)^4\,(-7+x)^5\,(-5+x)\,\left(68-17\,x+x^2\right),$$
$$(-11+x)\,(-9+x)^3\,(-7+x)^5\,\left(59-16\,x+x^2\right)\,\left(52-15\,x+x^2\right),$$
$$(-9+x)^3\,(-7+x)^4\,\left(68-17\,x+x^2\right)\,\left(59-16\,x+x^2\right)^2,$$

$$(-9+x)^5\,(-8+x)\,(-7+x)^5\,\left(51-16\,x+x^2\right),$$
$$(-9+x)^5\,(-7+x)^4\,\left(2864-1661\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^5\,\left(3680-2019\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^5\,(-8+x)\,(-7+x)^3\,(-5+x)\,\left(-503+199\,x-25\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^4\,\left(2872-1661\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^4\,(-8+x)\,(-7+x)^4\,\left(3229-1824\,x+370\,x^2-32\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^5\,\left(3688-2019\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^3\,(-8+x)\,(-7+x)^5\,\left(-377+167\,x-23\,x^2+x^3\right),$$
$$(-9+x)^6\,(-7+x)^4\,(-5+x)\,\left(64-17\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^4\,\left(-25\,904+17\,829\,x-4784\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-9+x)^4\,(-7+x)^4\,\left(-25\,888+17\,829\,x-4784\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-11+x)\,(-9+x)^4\,(-7+x)^6\,\left(48-15\,x+x^2\right),$$
$$(-11+x)\,(-9+x)^4\,(-8+x)\,(-7+x)^4\,(-5+x)\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^3\,\left(59-16\,x+x^2\right)\,\left(3088-1721\,x+351\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^3\,(-7+x)^4\,\left(59-16\,x+x^2\right)\,\left(3968-2087\,x+399\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^3\,(-8+x)\,(-7+x)^3\,\left(59-16\,x+x^2\right)^3,\ (-9+x)^5\,(-7+x)^5\,\left(-404+179\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^4\,\left(2836-1657\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^5\,\left(3644-2015\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^3\,\left(-19\,924+14\,443\,x-4086\,x^2+564\,x^3-38\,x^4+x^5\right),$$
$$(-9+x)^6\,(-7+x)^4\,\left(-316+149\,x-22\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^4\,\left(-25\,580+17\,757\,x-4780\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-11+x)\,(-9+x)^4\,(-7+x)^5\,\left(-332+153\,x-22\,x^2+x^3\right),$$
$$(-9+x)^6\,(-7+x)^3\,(-5+x)\,\left(-444+183\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^4\,\left(2852-1657\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^4\,(-7+x)^4\,\left(2332-1403\,x+307\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^4\,\left(68-17\,x+x^2\right)\,\left(-377+167\,x-23\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)^5\,(-7+x)^4\,(-5+x)\,\left(52-15\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^4\,\left(59-16\,x+x^2\right)\,\left(-436+183\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^3\,(-5+x)\,\left(68-17\,x+x^2\right)\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^3\,\left(59-16\,x+x^2\right)^2\,\left(52-15\,x+x^2\right),$$
$$(-9+x)^5\,(-8+x)\,(-7+x)^4\,\left(-349+163\,x-23\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^5\,\left(-400+179\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-8+x)\,(-7+x)^3\,\left(2459-1490\,x+324\,x^2-30\,x^3+x^4\right),$$
$$(-9+x)^6\,(-7+x)^4\,\left(-312+149\,x-22\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)^4\,(-8+x)\,(-7+x)^5\,\left(41-14\,x+x^2\right),$$
$$(-9+x)^6\,(-7+x)^3\,\left(2192-1355\,x+303\,x^2-29\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^5\,(-7+x)^4\,\left(-256+127\,x-20\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^4\,\left(-25\,328+17\,693\,x-4776\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-11+x)\,(-9+x)^6\,(-8+x)\,(-7+x)^3\,(-5+x)^2,$$
$$(-9+x)^5\,(-7+x)^3\,\left(-19\,784+14\,395\,x-4082\,x^2+564\,x^3-38\,x^4+x^5\right),$$
$$(-9+x)^5\,(-7+x)^4\,\left(2824-1653\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^4\,(-8+x)\,(-7+x)^3\,\left(59-16\,x+x^2\right)\,\left(-377+167\,x-23\,x^2+x^3\right),$$

$$(-9+x)^6\,(-7+x)^2\,(-5+x)\,\left(3088-1721\,x+351\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^3\,(-5+x)\,\left(3968-2087\,x+399\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^4\,\left(59-16\,x+x^2\right)\,\left(48-15\,x+x^2\right),$$
$$(-9+x)^5\,(-8+x)\,(-7+x)^2\,(-5+x)\,\left(59-16\,x+x^2\right)^2,$$
$$(-9+x)^5\,(-7+x)^4\,\left(2764-1649\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^6\,(-7+x)^5\,(-4+x),$$
$$(-9+x)^6\,(-7+x)^3\,\left(2164-1351\,x+303\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^4\,\left(2780-1649\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^6\,(-7+x)^3\,\left(2172-1351\,x+303\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^3\,\left(-19\,532+14\,331\,x-4078\,x^2+564\,x^3-38\,x^4+x^5\right),$$
$$(-9+x)^5\,(-7+x)^4\,\left(68-17\,x+x^2\right)\,\left(41-14\,x+x^2\right),$$
$$(-9+x)^6\,(-7+x)^3\,(-5+x)\,\left(-436+183\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^3\,\left(52-15\,x+x^2\right)\,\left(-377+167\,x-23\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^3\,\left(59-16\,x+x^2\right)\,\left(-332+153\,x-22\,x^2+x^3\right),$$
$$(-9+x)^7\,(-7+x)^2\,(-5+x)^2\,\left(68-17\,x+x^2\right),$$
$$(-9+x)^5\,(-7+x)^2\,\left(59-16\,x+x^2\right)\,\left(2332-1403\,x+307\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^6\,(-7+x)^2\,(-5+x)\,\left(59-16\,x+x^2\right)\,\left(52-15\,x+x^2\right),$$
$$(-11+x)\,(-9+x)^5\,(-8+x)\,(-7+x)^4\,\left(31-12\,x+x^2\right),$$
$$(-9+x)^6\,(-7+x)^4\,\left(-304+149\,x-22\,x^2+x^3\right),$$
$$(-9+x)^6\,(-8+x)\,(-7+x)^3\,\left(-267+135\,x-21\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^5\,\left(-392+179\,x-24\,x^2+x^3\right),$$
$$(-9+x)^6\,(-7+x)^3\,\left(2144-1347\,x+303\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^3\,\left(-19\,280+14\,267\,x-4074\,x^2+564\,x^3-38\,x^4+x^5\right),$$
$$(-9+x)^6\,(-8+x)\,(-7+x)^2\,(-5+x)\,\left(-377+167\,x-23\,x^2+x^3\right),$$
$$(-9+x)^6\,(-7+x)^3\,\left(2152-1347\,x+303\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^5\,(-8+x)\,(-7+x)^3\,\left(59-16\,x+x^2\right)\,\left(41-14\,x+x^2\right),$$
$$(-9+x)^7\,(-7+x)^3\,(-5+x)\,\left(48-15\,x+x^2\right),$$
$$(-9+x)^6\,(-7+x)^2\,\left(59-16\,x+x^2\right)\,\left(-256+127\,x-20\,x^2+x^3\right),$$
$$(-9+x)^7\,(-8+x)\,(-7+x)\,(-5+x)^2\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^6\,(-7+x)^4\,\left(-300+149\,x-22\,x^2+x^3\right),$$
$$(-9+x)^6\,(-7+x)^3\,\left(68-17\,x+x^2\right)\,\left(31-12\,x+x^2\right),$$
$$(-9+x)^5\,(-7+x)^4\,\left(2708-1641\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^6\,(-7+x)^3\,\left(2116-1343\,x+303\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^6\,(-7+x)^2\,\left(-14\,884+11\,525\,x-3464\,x^2+506\,x^3-36\,x^4+x^5\right),$$
$$(-9+x)^7\,(-7+x)^3\,(-4+x)\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^7\,(-7+x)^2\,(-5+x)\,\left(-332+153\,x-22\,x^2+x^3\right),$$
$$(-9+x)^6\,(-7+x)^3\,\left(52-15\,x+x^2\right)\,\left(41-14\,x+x^2\right),$$
$$(-9+x)^7\,(-7+x)\,(-5+x)\,\left(2332-1403\,x+307\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^8\,(-7+x)\,(-5+x)^2\,\left(52-15\,x+x^2\right),\ (-9+x)^6\,(-8+x)\,(-7+x)^4\,\left(37-14\,x+x^2\right),$$
$$(-9+x)^6\,(-7+x)^3\,\left(2080-1339\,x+303\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^6\,(-8+x)\,(-7+x)^2\,\left(59-16\,x+x^2\right)\,\left(31-12\,x+x^2\right),$$
$$(-9+x)^7\,(-7+x)^3\,\left(-232+123\,x-20\,x^2+x^3\right),$$

$$(-9+x)^7\,(-7+x)^2\,\left(1632-1093\,x+263\,x^2-27\,x^3+x^4\right),$$
$$(-9+x)^7\,(-8+x)\,(-7+x)^2\,(-5+x)\,\left(41-14\,x+x^2\right),$$
$$(-9+x)^8\,(-7+x)\,(-5+x)\,\left(-256+127\,x-20\,x^2+x^3\right),$$
$$(-9+x)^9\,(-8+x)\,(-5+x)^3,\ (-9+x)^6\,(-7+x)^4\,\left(-292+149\,x-22\,x^2+x^3\right),$$
$$(-9+x)^7\,(-7+x)^3\,\left(-228+123\,x-20\,x^2+x^3\right),$$
$$(-9+x)^7\,(-7+x)^2\,\left(1604-1089\,x+263\,x^2-27\,x^3+x^4\right),$$
$$(-9+x)^7\,(-7+x)^2\,\left(52-15\,x+x^2\right)\,\left(31-12\,x+x^2\right),\ (-9+x)^9\,(-7+x)^2\,(-5+x)\,(-4+x),$$
$$(-9+x)^6\,(-8+x)\,(-7+x)^3\,\left(-251+135\,x-21\,x^2+x^3\right),$$
$$(-9+x)^7\,(-7+x)^4\,\left(32-13\,x+x^2\right),\ (-9+x)^7\,(-8+x)\,(-7+x)^2\,\left(-197+111\,x-19\,x^2+x^3\right),$$
$$(-9+x)^8\,(-7+x)^2\,\left(-176+101\,x-18\,x^2+x^3\right),$$
$$(-9+x)^8\,(-8+x)\,(-7+x)\,(-5+x)\,\left(31-12\,x+x^2\right),$$
$$(-9+x)^7\,(-7+x)^3\,\left(-220+123\,x-20\,x^2+x^3\right),$$
$$(-9+x)^8\,(-7+x)^2\,\left(-172+101\,x-18\,x^2+x^3\right),\ (-9+x)^8\,(-8+x)\,(-7+x)^3\,(-3+x)\Big\}$$

$$\mathbf{dim16list} = \Big\{(-13+x)\,(-9+x)^3\,(-8+x)\,(-7+x)^{11}\,(5+x)^{25},$$
$$(-9+x)^3\,(-7+x)^{10}\,(5+x)^{25}\,\left(-724+251\,x-28\,x^2+x^3\right),$$
$$(-9+x)^2\,(-7+x)^{11}\,(5+x)^{25}\,\left(-932+293\,x-30\,x^2+x^3\right),$$
$$(-9+x)^3\,(-8+x)\,(-7+x)^9\,(5+x)^{25}\,\left(-629+231\,x-27\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^{10}\,(5+x)^{25}\,\left(80-19\,x+x^2\right),$$
$$(-9+x)^2\,(-8+x)\,(-7+x)^{10}\,(5+x)^{25}\,\left(-811+271\,x-29\,x^2+x^3\right),$$
$$(-9+x)^2\,(-7+x)^{11}\,(5+x)^{25}\,\left(-928+293\,x-30\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)\,(-8+x)\,(-7+x)^{11}\,(5+x)^{25}\,\left(95-20\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^9\,(5+x)^{25}\,\left(-556+213\,x-26\,x^2+x^3\right),$$
$$(-9+x)^3\,(-7+x)^{10}\,(5+x)^{25}\,\left(-716+251\,x-28\,x^2+x^3\right),$$
$$(-9+x)^2\,(-7+x)^{10}\,(5+x)^{25}\,\left(6452-2975\,x+503\,x^2-37\,x^3+x^4\right),$$
$$(-9+x)^2\,(-7+x)^{10}\,(5+x)^{25}\,\left(95-20\,x+x^2\right)\,\left(68-17\,x+x^2\right),$$
$$(-12+x)\,(-11+x)\,(-9+x)^2\,(-7+x)^{12}\,(5+x)^{25},$$
$$(-9+x)^4\,(-8+x)\,(-7+x)^9\,(5+x)^{25}\,\left(69-18\,x+x^2\right),$$
$$(-9+x)^3\,(-7+x)^9\,(5+x)^{25}\,\left(4976-2469\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-9+x)^3\,(-7+x)^{10}\,(5+x)^{25}\,\left(-712+251\,x-28\,x^2+x^3\right),$$
$$(-9+x)^2\,(-8+x)\,(-7+x)^9\,(5+x)^{25}\,\left(95-20\,x+x^2\right)\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^2\,(-7+x)^{10}\,(5+x)^{25}\,\left(6416-2971\,x+503\,x^2-37\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^2\,(-8+x)\,(-7+x)^{10}\,(5+x)^{25}\,\left(73-18\,x+x^2\right),$$
$$(-11+x)\,(-9+x)\,(-7+x)^{11}\,(5+x)^{25}\,\left(-752+255\,x-28\,x^2+x^3\right),$$
$$(-11+x)^3\,(-8+x)\,(-7+x)^{12}\,(5+x)^{25},$$
$$(-9+x)^4\,(-7+x)^9\,(5+x)^{25}\,\left(-548+213\,x-26\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^8\,(5+x)^{25}\,\left(3844-2039\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^3\,(-7+x)^9\,(5+x)^{25}\,\left(95-20\,x+x^2\right)\,\left(52-15\,x+x^2\right),$$
$$(-9+x)^3\,(-7+x)^9\,(5+x)^{25}\,\left(4948-2465\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-12+x)\,(-9+x)^3\,(-7+x)^{10}\,(5+x)^{25}\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^2\,(-7+x)^9\,(5+x)^{25}\,\left(-44\,588+27\,141\,x-6488\,x^2+762\,x^3-44\,x^4+x^5\right),$$
$$(-9+x)^3\,(-7+x)^9\,(5+x)^{25}\,\left(73-18\,x+x^2\right)\,\left(68-17\,x+x^2\right),$$

$$(-11+x)\,(-9+x)^2\,(-7+x)^{10}\,(5+x)^{25}\,\left(-580+217\,x-26\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)\,(-7+x)^{10}\,(5+x)^{25}\,\left(5228-2533\,x+451\,x^2-35\,x^3+x^4\right),$$
$$(-11+x)^2\,(-9+x)\,(-7+x)^{11}\,(5+x)^{25}\,\left(68-17\,x+x^2\right),$$
$$(-9+x)^4\,(-8+x)\,(-7+x)^8\,(-5+x)\,(5+x)^{25}\,\left(95-20\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^9\,(5+x)^{25}\,\left(-544+213\,x-26\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^8\,(5+x)^{25}\,\left(-424+179\,x-24\,x^2+x^3\right),$$
$$(-9+x)^3\,(-8+x)\,(-7+x)^9\,(5+x)^{25}\,\left(-613+231\,x-27\,x^2+x^3\right),$$
$$(-9+x)^3\,(-7+x)^8\,(5+x)^{25}\,\left(-34\,400+22\,139\,x-5590\,x^2+692\,x^3-42\,x^4+x^5\right),$$
$$(-9+x)^3\,(-7+x)^9\,(5+x)^{25}\,\left(4912-2461\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-9+x)^3\,(-8+x)\,(-7+x)^8\,(5+x)^{25}\,\left(73-18\,x+x^2\right)\left(59-16\,x+x^2\right),$$
$$(-9+x)^3\,(-7+x)^9\,(5+x)^{25}\,\left(4920-2461\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^2\,(-8+x)\,(-7+x)^9\,(5+x)^{25}\,\left(-503+199\,x-25\,x^2+x^3\right),$$
$$(-9+x)^2\,(-7+x)^9\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\left(-752+255\,x-28\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)^3\,(-7+x)^{10}\,(5+x)^{25}\,\left(64-17\,x+x^2\right),$$
$$(-11+x)^2\,(-9+x)\,(-8+x)\,(-7+x)^{10}\,(5+x)^{25}\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^8\,(5+x)^{25}\,\left(3772-2031\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-12+x)\,(-9+x)^5\,(-7+x)^9\,(-5+x)\,(5+x)^{25},$$
$$(-9+x)^4\,(-7+x)^8\,(5+x)^{25}\,\left(3788-2031\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^3\,(-7+x)^9\,(5+x)^{25}\,\left(4868-2457\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^8\,(5+x)^{25}\,\left(73-18\,x+x^2\right)\left(52-15\,x+x^2\right),$$
$$(-9+x)^3\,(-7+x)^8\,(5+x)^{25}\,\left(-34\,148+22\,075\,x-5586\,x^2+692\,x^3-42\,x^4+x^5\right),$$
$$(-9+x)^3\,(-7+x)^9\,(5+x)^{25}\,\left(4876-2457\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-9+x)^3\,(-7+x)^8\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\left(-580+217\,x-26\,x^2+x^3\right),$$
$$(-9+x)^3\,(-7+x)^8\,(5+x)^{25}\,\left(68-17\,x+x^2\right)\left(-503+199\,x-25\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)^3\,(-7+x)^9\,(5+x)^{25}\,\left(-444+183\,x-24\,x^2+x^3\right),$$
$$(-9+x)^2\,(-7+x)^8\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\left(5228-2533\,x+451\,x^2-35\,x^3+x^4\right),$$
$$(-11+x)^2\,(-9+x)^2\,(-7+x)^{10}\,(5+x)^{25}\,\left(52-15\,x+x^2\right),$$
$$(-11+x)\,(-9+x)^2\,(-7+x)^9\,(5+x)^{25}\,\left(68-17\,x+x^2\right)\left(59-16\,x+x^2\right),$$
$$(-9+x)^4\,(-8+x)\,(-7+x)^8\,(5+x)^{25}\,\left(-467+195\,x-25\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^8\,(5+x)^{25}\,\left(-416+179\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-8+x)\,(-7+x)^7\,(-5+x)\,(5+x)^{25}\,\left(73-18\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^9\,(5+x)^{25}\,\left(-536+213\,x-26\,x^2+x^3\right),$$
$$(-9+x)^3\,(-8+x)\,(-7+x)^8\,(5+x)^{25}\,\left(4219-2222\,x+420\,x^2-34\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(-26\,336+17\,949\,x-4792\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-9+x)^4\,(-7+x)^8\,(-5+x)\,(5+x)^{25}\,\left(-752+255\,x-28\,x^2+x^3\right),$$
$$(-9+x)^3\,(-7+x)^9\,(5+x)^{25}\,\left(4832-2453\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^8\,(5+x)^{25}\,\left(3768-2027\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^3\,(-8+x)\,(-7+x)^7\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\left(-503+199\,x-25\,x^2+x^3\right),$$
$$(-9+x)^3\,(-7+x)^8\,(5+x)^{25}\,\left(-33\,896+22\,011\,x-5582\,x^2+692\,x^3-42\,x^4+x^5\right),$$
$$(-11+x)^2\,(-9+x)^3\,(-8+x)\,(-7+x)^9\,(-5+x)\,(5+x)^{25},$$
$$(-9+x)^4\,(-7+x)^8\,(5+x)^{25}\,\left(64-17\,x+x^2\right)\left(59-16\,x+x^2\right),$$
$$(-11+x)\,(-9+x)^3\,(-7+x)^8\,(5+x)^{25}\,\left(3088-1721\,x+351\,x^2-31\,x^3+x^4\right),$$

$$(-11+x)\,(-9+x)^2\,(-7+x)^9\,(5+x)^{25}\,\left(3968-2087\,x+399\,x^2-33\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^2\,(-8+x)\,(-7+x)^8\,(5+x)^{25}\,\left(59-16\,x+x^2\right)^2,$$
$$(-9+x)^5\,(-7+x)^8\,(5+x)^{25}\,\left(-412+179\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^7\,(5+x)^{25}\,\left(2892-1665\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^8\,(5+x)^{25}\,\left(3716-2023\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^7\,(-5+x)\,(5+x)^{25}\,\left(-580+217\,x-26\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(-26\,084+17\,885\,x-4788\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-9+x)^4\,(-7+x)^9\,(5+x)^{25}\,\left(-532+213\,x-26\,x^2+x^3\right),$$
$$(-9+x)^3\,(-7+x)^8\,(5+x)^{25}\,\left(-33\,500+21\,931\,x-5578\,x^2+692\,x^3-42\,x^4+x^5\right),$$
$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(52-15\,x+x^2\right)\,\left(-503+199\,x-25\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^7\,(-5+x)\,(5+x)^{25}\,\left(5228-2533\,x+451\,x^2-35\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^8\,(5+x)^{25}\,\left(3732-2023\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^3\,(-7+x)^9\,(5+x)^{25}\,\left(-436+183\,x-24\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\,\left(-444+183\,x-24\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)^4\,(-7+x)^8\,(-5+x)\,(5+x)^{25}\,\left(68-17\,x+x^2\right),$$
$$(-11+x)\,(-9+x)^3\,(-7+x)^8\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\,\left(52-15\,x+x^2\right),$$
$$(-9+x)^3\,(-7+x)^7\,(5+x)^{25}\,\left(68-17\,x+x^2\right)\,\left(59-16\,x+x^2\right)^2,$$
$$(-9+x)^5\,(-8+x)\,(-7+x)^8\,(5+x)^{25}\,\left(51-16\,x+x^2\right),$$
$$(-9+x)^5\,(-7+x)^7\,(5+x)^{25}\,\left(2864-1661\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^8\,(5+x)^{25}\,\left(3680-2019\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^5\,(-8+x)\,(-7+x)^6\,(-5+x)\,(5+x)^{25}\,\left(-503+199\,x-25\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^7\,(5+x)^{25}\,\left(2872-1661\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^4\,(-8+x)\,(-7+x)^7\,(5+x)^{25}\,\left(3229-1824\,x+370\,x^2-32\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^8\,(5+x)^{25}\,\left(3688-2019\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^3\,(-8+x)\,(-7+x)^8\,(5+x)^{25}\,\left(-377+167\,x-23\,x^2+x^3\right),$$
$$(-9+x)^6\,(-7+x)^7\,(-5+x)\,(5+x)^{25}\,\left(64-17\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(-25\,904+17\,829\,x-4784\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(-25\,888+17\,829\,x-4784\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-11+x)\,(-9+x)^4\,(-7+x)^9\,(5+x)^{25}\,\left(48-15\,x+x^2\right),$$
$$(-11+x)\,(-9+x)^4\,(-8+x)\,(-7+x)^7\,(-5+x)\,(5+x)^{25}\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^6\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\,\left(3088-1721\,x+351\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^3\,(-7+x)^7\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\,\left(3968-2087\,x+399\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^3\,(-8+x)\,(-7+x)^6\,(5+x)^{25}\,\left(59-16\,x+x^2\right)^3,$$
$$(-9+x)^5\,(-7+x)^8\,(5+x)^{25}\,\left(-404+179\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^7\,(5+x)^{25}\,\left(2836-1657\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^8\,(5+x)^{25}\,\left(3644-2015\,x+395\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^6\,(5+x)^{25}\,\left(-19\,924+14\,443\,x-4086\,x^2+564\,x^3-38\,x^4+x^5\right),$$
$$(-9+x)^6\,(-7+x)^7\,(5+x)^{25}\,\left(-316+149\,x-22\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(-25\,580+17\,757\,x-4780\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-11+x)\,(-9+x)^4\,(-7+x)^8\,(5+x)^{25}\,\left(-332+153\,x-22\,x^2+x^3\right),$$
$$(-9+x)^6\,(-7+x)^6\,(-5+x)\,(5+x)^{25}\,\left(-444+183\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^7\,(5+x)^{25}\,\left(2852-1657\,x+347\,x^2-31\,x^3+x^4\right),$$

$$(-11+x)\,(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(2332-1403\,x+307\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(68-17\,x+x^2\right)\,\left(-377+167\,x-23\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)^5\,(-7+x)^7\,(-5+x)\,(5+x)^{25}\,\left(52-15\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\,\left(-436+183\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^6\,(-5+x)\,(5+x)^{25}\,\left(68-17\,x+x^2\right)\,\left(59-16\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^6\,(5+x)^{25}\,\left(59-16\,x+x^2\right)^2\,\left(52-15\,x+x^2\right),$$
$$(-9+x)^5\,(-8+x)\,(-7+x)^7\,(5+x)^{25}\,\left(-349+163\,x-23\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^8\,(5+x)^{25}\,\left(-400+179\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-8+x)\,(-7+x)^6\,(5+x)^{25}\,\left(2459-1490\,x+324\,x^2-30\,x^3+x^4\right),$$
$$(-9+x)^6\,(-7+x)^7\,(5+x)^{25}\,\left(-312+149\,x-22\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)^4\,(-8+x)\,(-7+x)^8\,(5+x)^{25}\,\left(41-14\,x+x^2\right),$$
$$(-9+x)^6\,(-7+x)^6\,(5+x)^{25}\,\left(2192-1355\,x+303\,x^2-29\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^5\,(-7+x)^7\,(5+x)^{25}\,\left(-256+127\,x-20\,x^2+x^3\right),$$
$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(-25\,328+17\,693\,x-4776\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-11+x)\,(-9+x)^6\,(-8+x)\,(-7+x)^6\,(-5+x)^2\,(5+x)^{25},$$
$$(-9+x)^5\,(-7+x)^6\,(5+x)^{25}\,\left(-19\,784+14\,395\,x-4082\,x^2+564\,x^3-38\,x^4+x^5\right),$$
$$(-9+x)^5\,(-7+x)^7\,(5+x)^{25}\,\left(2824-1653\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^4\,(-8+x)\,(-7+x)^6\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\,\left(-377+167\,x-23\,x^2+x^3\right),$$
$$(-9+x)^6\,(-7+x)^5\,(-5+x)\,(5+x)^{25}\,\left(3088-1721\,x+351\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^6\,(-5+x)\,(5+x)^{25}\,\left(3968-2087\,x+399\,x^2-33\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^7\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\,\left(48-15\,x+x^2\right),$$
$$(-9+x)^5\,(-8+x)\,(-7+x)^5\,(-5+x)\,(5+x)^{25}\,\left(59-16\,x+x^2\right)^2,$$
$$(-9+x)^5\,(-7+x)^7\,(5+x)^{25}\,\left(2764-1649\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^6\,(-7+x)^8\,(-4+x)\,(5+x)^{25},$$
$$(-9+x)^6\,(-7+x)^6\,(5+x)^{25}\,\left(2164-1351\,x+303\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^7\,(5+x)^{25}\,\left(2780-1649\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-9+x)^6\,(-7+x)^6\,(5+x)^{25}\,\left(2172-1351\,x+303\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^6\,(5+x)^{25}\,\left(-19\,532+14\,331\,x-4078\,x^2+564\,x^3-38\,x^4+x^5\right),$$
$$(-9+x)^5\,(-7+x)^7\,(5+x)^{25}\,\left(68-17\,x+x^2\right)\,\left(41-14\,x+x^2\right),$$
$$(-9+x)^6\,(-7+x)^6\,(-5+x)\,(5+x)^{25}\,\left(-436+183\,x-24\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^6\,(5+x)^{25}\,\left(52-15\,x+x^2\right)\,\left(-377+167\,x-23\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^6\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\,\left(-332+153\,x-22\,x^2+x^3\right),$$
$$(-9+x)^7\,(-7+x)^5\,(-5+x)^2\,(5+x)^{25}\,\left(68-17\,x+x^2\right),$$
$$(-9+x)^5\,(-7+x)^5\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\,\left(2332-1403\,x+307\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^6\,(-7+x)^5\,(-5+x)\,(5+x)^{25}\,\left(59-16\,x+x^2\right)\,\left(52-15\,x+x^2\right),$$
$$(-11+x)\,(-9+x)^5\,(-8+x)\,(-7+x)^7\,(5+x)^{25}\,\left(31-12\,x+x^2\right),$$
$$(-9+x)^6\,(-7+x)^7\,(5+x)^{25}\,\left(-304+149\,x-22\,x^2+x^3\right),$$
$$(-9+x)^6\,(-8+x)\,(-7+x)^6\,(5+x)^{25}\,\left(-267+135\,x-21\,x^2+x^3\right),$$
$$(-9+x)^5\,(-7+x)^8\,(5+x)^{25}\,\left(-392+179\,x-24\,x^2+x^3\right),$$
$$(-9+x)^6\,(-7+x)^6\,(5+x)^{25}\,\left(2144-1347\,x+303\,x^2-29\,x^3+x^4\right),$$
$$(-9+x)^5\,(-7+x)^6\,(5+x)^{25}\,\left(-19\,280+14\,267\,x-4074\,x^2+564\,x^3-38\,x^4+x^5\right),$$
$$(-9+x)^6\,(-8+x)\,(-7+x)^5\,(-5+x)\,(5+x)^{25}\,\left(-377+167\,x-23\,x^2+x^3\right),$$

```
(-9 + x)^6 (-7 + x)^6 (5 + x)^25 (2152 - 1347 x + 303 x^2 - 29 x^3 + x^4),
(-9 + x)^5 (-8 + x) (-7 + x)^6 (5 + x)^25 (59 - 16 x + x^2) (41 - 14 x + x^2),
(-9 + x)^7 (-7 + x)^6 (-5 + x) (5 + x)^25 (48 - 15 x + x^2),
(-9 + x)^6 (-7 + x)^5 (5 + x)^25 (59 - 16 x + x^2) (-256 + 127 x - 20 x^2 + x^3),
(-9 + x)^7 (-8 + x) (-7 + x)^4 (-5 + x)^2 (5 + x)^25 (59 - 16 x + x^2),
(-9 + x)^6 (-7 + x)^7 (5 + x)^25 (-300 + 149 x - 22 x^2 + x^3),
(-9 + x)^6 (-7 + x)^6 (5 + x)^25 (68 - 17 x + x^2) (31 - 12 x + x^2),
(-9 + x)^5 (-7 + x)^7 (5 + x)^25 (2708 - 1641 x + 347 x^2 - 31 x^3 + x^4),
(-9 + x)^6 (-7 + x)^6 (5 + x)^25 (2116 - 1343 x + 303 x^2 - 29 x^3 + x^4),
(-9 + x)^6 (-7 + x)^5 (5 + x)^25 (-14 884 + 11 525 x - 3464 x^2 + 506 x^3 - 36 x^4 + x^5),
(-9 + x)^7 (-7 + x)^6 (-4 + x) (5 + x)^25 (59 - 16 x + x^2),
(-9 + x)^7 (-7 + x)^5 (-5 + x) (5 + x)^25 (-332 + 153 x - 22 x^2 + x^3),
(-9 + x)^6 (-7 + x)^6 (5 + x)^25 (52 - 15 x + x^2) (41 - 14 x + x^2),
(-9 + x)^7 (-7 + x)^4 (-5 + x) (5 + x)^25 (2332 - 1403 x + 307 x^2 - 29 x^3 + x^4),
(-9 + x)^8 (-7 + x)^4 (-5 + x)^2 (5 + x)^25 (52 - 15 x + x^2),
(-9 + x)^6 (-8 + x) (-7 + x)^7 (5 + x)^25 (37 - 14 x + x^2),
(-9 + x)^6 (-7 + x)^6 (5 + x)^25 (2080 - 1339 x + 303 x^2 - 29 x^3 + x^4),
(-9 + x)^6 (-8 + x) (-7 + x)^5 (5 + x)^25 (59 - 16 x + x^2) (31 - 12 x + x^2),
(-9 + x)^7 (-7 + x)^6 (5 + x)^25 (-232 + 123 x - 20 x^2 + x^3),
(-9 + x)^7 (-7 + x)^5 (5 + x)^25 (1632 - 1093 x + 263 x^2 - 27 x^3 + x^4),
(-9 + x)^7 (-8 + x) (-7 + x)^5 (-5 + x) (5 + x)^25 (41 - 14 x + x^2),
(-9 + x)^8 (-7 + x)^4 (-5 + x) (5 + x)^25 (-256 + 127 x - 20 x^2 + x^3),
(-9 + x)^9 (-8 + x) (-7 + x)^3 (-5 + x)^3 (5 + x)^25,
(-9 + x)^6 (-7 + x)^7 (5 + x)^25 (-292 + 149 x - 22 x^2 + x^3),
(-9 + x)^7 (-7 + x)^6 (5 + x)^25 (-228 + 123 x - 20 x^2 + x^3),
(-9 + x)^7 (-7 + x)^5 (5 + x)^25 (1604 - 1089 x + 263 x^2 - 27 x^3 + x^4),
(-9 + x)^7 (-7 + x)^5 (5 + x)^25 (52 - 15 x + x^2) (31 - 12 x + x^2),
(-9 + x)^9 (-7 + x)^5 (-5 + x) (-4 + x) (5 + x)^25, (-9 + x)^6 (-8 + x) (-7 + x)^6
 (5 + x)^25 (-251 + 135 x - 21 x^2 + x^3), (-9 + x)^7 (-7 + x)^7 (5 + x)^25 (32 - 13 x + x^2),
(-9 + x)^7 (-8 + x) (-7 + x)^5 (5 + x)^25 (-197 + 111 x - 19 x^2 + x^3),
(-9 + x)^8 (-7 + x)^5 (5 + x)^25 (-176 + 101 x - 18 x^2 + x^3),
(-9 + x)^8 (-8 + x) (-7 + x)^4 (-5 + x) (5 + x)^25 (31 - 12 x + x^2),
(-9 + x)^7 (-7 + x)^6 (5 + x)^25 (-220 + 123 x - 20 x^2 + x^3),
(-9 + x)^8 (-7 + x)^5 (5 + x)^25 (-172 + 101 x - 18 x^2 + x^3),
(-9 + x)^8 (-8 + x) (-7 + x)^6 (-3 + x) (5 + x)^25};
```

```
Length[dim16list]
```

```
190
```

modfilter[dim16list, chiSmod128n41, 128]

$$\Big\{(-9+x)^4\,(-7+x)^{10}\,(5+x)^{25}\,\left(80-19\,x+x^2\right),$$
$$(-12+x)\,(-11+x)\,(-9+x)^2\,(-7+x)^{12}\,(5+x)^{25},\ (-11+x)^3\,(-8+x)\,(-7+x)^{12}\,(5+x)^{25},$$
$$(-9+x)^3\,(-7+x)^9\,(5+x)^{25}\,\left(4948-2465\,x+447\,x^2-35\,x^3+x^4\right),$$
$$(-9+x)^4\,(-7+x)^9\,(5+x)^{25}\,\left(-544+213\,x-26\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)^3\,(-7+x)^{10}\,(5+x)^{25}\,\left(64-17\,x+x^2\right),$$
$$(-11+x)^2\,(-9+x)^2\,(-7+x)^{10}\,(5+x)^{25}\,\left(52-15\,x+x^2\right),$$
$$(-11+x)\,(-9+x)^2\,(-8+x)\,(-7+x)^8\,(5+x)^{25}\,\left(59-16\,x+x^2\right)^2,$$
$$(-9+x)^5\,(-7+x)^8\,(5+x)^{25}\,\left(-412+179\,x-24\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)^4\,(-7+x)^8\,(-5+x)\,(5+x)^{25}\,\left(68-17\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(-25\,904+17\,829\,x-4784\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-11+x)\,(-9+x)^4\,(-7+x)^9\,(5+x)^{25}\,\left(48-15\,x+x^2\right),$$
$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(-25\,580+17\,757\,x-4780\,x^2+626\,x^3-40\,x^4+x^5\right),$$
$$(-9+x)^4\,(-7+x)^6\,(5+x)^{25}\,\left(59-16\,x+x^2\right)^2\,\left(52-15\,x+x^2\right),$$
$$(-9+x)^5\,(-8+x)\,(-7+x)^7\,(5+x)^{25}\,\left(-349+163\,x-23\,x^2+x^3\right),$$
$$(-11+x)\,(-9+x)^6\,(-8+x)\,(-7+x)^6\,(-5+x)^2\,(5+x)^{25},$$
$$(-9+x)^5\,(-7+x)^7\,(5+x)^{25}\,\left(2824-1653\,x+347\,x^2-31\,x^3+x^4\right),$$
$$(-11+x)\,(-9+x)^6\,(-7+x)^8\,(-4+x)\,(5+x)^{25},$$
$$(-9+x)^8\,(-7+x)^4\,(-5+x)^2\,(5+x)^{25}\,\left(52-15\,x+x^2\right),$$
$$(-9+x)^7\,(-7+x)^6\,(5+x)^{25}\,\left(-232+123\,x-20\,x^2+x^3\right),$$
$$(-9+x)^6\,(-7+x)^7\,(5+x)^{25}\,\left(-292+149\,x-22\,x^2+x^3\right),$$
$$(-9+x)^8\,(-8+x)\,(-7+x)^6\,(-3+x)\,(5+x)^{25}\Big\}$$

```
dim16listmod128 = {(-9 + x)^4 (-7 + x)^10 (5 + x)^25 (80 - 19 x + x^2),
    (-12 + x) (-11 + x) (-9 + x)^2 (-7 + x)^12 (5 + x)^25, (-11 + x)^3 (-8 + x) (-7 + x)^12 (5 + x)^25,
    (-9 + x)^3 (-7 + x)^9 (5 + x)^25 (4948 - 2465 x + 447 x^2 - 35 x^3 + x^4),
    (-9 + x)^4 (-7 + x)^9 (5 + x)^25 (-544 + 213 x - 26 x^2 + x^3),
    (-11 + x) (-9 + x)^3 (-7 + x)^10 (5 + x)^25 (64 - 17 x + x^2),
    (-11 + x)^2 (-9 + x)^2 (-7 + x)^10 (5 + x)^25 (52 - 15 x + x^2),
    (-11 + x) (-9 + x)^2 (-8 + x) (-7 + x)^8 (5 + x)^25 (59 - 16 x + x^2)^2,
    (-9 + x)^5 (-7 + x)^8 (5 + x)^25 (-412 + 179 x - 24 x^2 + x^3),
    (-11 + x) (-9 + x)^4 (-7 + x)^8 (-5 + x) (5 + x)^25 (68 - 17 x + x^2),
    (-9 + x)^4 (-7 + x)^7 (5 + x)^25 (-25 904 + 17 829 x - 4784 x^2 + 626 x^3 - 40 x^4 + x^5),
    (-11 + x) (-9 + x)^4 (-7 + x)^9 (5 + x)^25 (48 - 15 x + x^2),
    (-9 + x)^4 (-7 + x)^7 (5 + x)^25 (-25 580 + 17 757 x - 4780 x^2 + 626 x^3 - 40 x^4 + x^5),
    (-9 + x)^4 (-7 + x)^6 (5 + x)^25 (59 - 16 x + x^2)^2 (52 - 15 x + x^2),
    (-9 + x)^5 (-8 + x) (-7 + x)^7 (5 + x)^25 (-349 + 163 x - 23 x^2 + x^3),
    (-11 + x) (-9 + x)^6 (-8 + x) (-7 + x)^6 (-5 + x)^2 (5 + x)^25,
    (-9 + x)^5 (-7 + x)^7 (5 + x)^25 (2824 - 1653 x + 347 x^2 - 31 x^3 + x^4),
    (-11 + x) (-9 + x)^6 (-7 + x)^8 (-4 + x) (5 + x)^25,
    (-9 + x)^8 (-7 + x)^4 (-5 + x)^2 (5 + x)^25 (52 - 15 x + x^2),
    (-9 + x)^7 (-7 + x)^6 (5 + x)^25 (-232 + 123 x - 20 x^2 + x^3),
    (-9 + x)^6 (-7 + x)^7 (5 + x)^25 (-292 + 149 x - 22 x^2 + x^3),
    (-9 + x)^8 (-8 + x) (-7 + x)^6 (-3 + x) (5 + x)^25};

Length[dim16listmod128]
22
```

```
chi = (-9 + x)^4 (-7 + x)^10 (5 + x)^25 (80 - 19 x + x^2)
(-9 + x)^4 (-7 + x)^10 (5 + x)^25 (80 - 19 x + x^2)

CoefficientList[feasibleinterlacingpolylist[chi], x]
{{1815, -1314, 312, -30, 1}, {1743, -1306, 312, -30, 1}, {1759, -1306, 312, -30, 1},
 {1687, -1298, 312, -30, 1}, {1703, -1298, 312, -30, 1}, {1719, -1298, 312, -30, 1},
 {1631, -1290, 312, -30, 1}, {1647, -1290, 312, -30, 1}, {1575, -1282, 312, -30, 1}}

A = {{1815, -1314, 312, -30, 1}, {1743, -1306, 312, -30, 1},
    {1759, -1306, 312, -30, 1}, {1687, -1298, 312, -30, 1},
    {1703, -1298, 312, -30, 1}, {1719, -1298, 312, -30, 1}, {1631, -1290,
     312, -30, 1}, {1647, -1290, 312, -30, 1}, {1575, -1282, 312, -30, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} 1815 & -1314 & 312 & -30 & 1 \\ 1743 & -1306 & 312 & -30 & 1 \\ 1759 & -1306 & 312 & -30 & 1 \\ 1687 & -1298 & 312 & -30 & 1 \\ 1703 & -1298 & 312 & -30 & 1 \\ 1719 & -1298 & 312 & -30 & 1 \\ 1631 & -1290 & 312 & -30 & 1 \\ 1647 & -1290 & 312 & -30 & 1 \\ 1575 & -1282 & 312 & -30 & 1 \end{pmatrix}$$

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

```
{72 815, -53 602, 12 792, -1230, 41}
```

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

```
{1815 c[1] - 1314 c[2] + 312 c[3] - 30 c[4] + c[5],
 1743 c[1] - 1306 c[2] + 312 c[3] - 30 c[4] + c[5],
 1759 c[1] - 1306 c[2] + 312 c[3] - 30 c[4] + c[5],
 1687 c[1] - 1298 c[2] + 312 c[3] - 30 c[4] + c[5],
 1703 c[1] - 1298 c[2] + 312 c[3] - 30 c[4] + c[5],
 1719 c[1] - 1298 c[2] + 312 c[3] - 30 c[4] + c[5],
 1631 c[1] - 1290 c[2] + 312 c[3] - 30 c[4] + c[5],
 1647 c[1] - 1290 c[2] + 312 c[3] - 30 c[4] + c[5],
 1575 c[1] - 1282 c[2] + 312 c[3] - 30 c[4] + c[5]}
```

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

```
72 815 c[1] - 53 602 c[2] + 12 792 c[3] - 1230 c[4] + 41 c[5]
```

```
cert = Flatten[Array[c, 5] /.
   FindInstance[72 815 c[1] - 53 602 c[2] + 12 792 c[3] - 1230 c[4] + 41 c[5] < 0 &&
     1815 c[1] - 1314 c[2] + 312 c[3] - 30 c[4] + c[5] ≥ 0 &&
     1743 c[1] - 1306 c[2] + 312 c[3] - 30 c[4] + c[5] ≥ 0 &&
     1759 c[1] - 1306 c[2] + 312 c[3] - 30 c[4] + c[5] ≥ 0 &&
     1687 c[1] - 1298 c[2] + 312 c[3] - 30 c[4] + c[5] ≥ 0 &&
     1703 c[1] - 1298 c[2] + 312 c[3] - 30 c[4] + c[5] ≥ 0 &&
     1719 c[1] - 1298 c[2] + 312 c[3] - 30 c[4] + c[5] ≥ 0 &&
     1631 c[1] - 1290 c[2] + 312 c[3] - 30 c[4] + c[5] ≥ 0 &&
     1647 c[1] - 1290 c[2] + 312 c[3] - 30 c[4] + c[5] ≥ 0 &&
     1575 c[1] - 1282 c[2] + 312 c[3] - 30 c[4] + c[5] ≥ 0, Array[c, 5], Integers]]
```

```
{-4390, -26 341, 0, 0, -26 642 928}
```

```
GCD[-4390, -26 341, 0, 0, -26 642 928]
```

```
1
```

```
Reverse[cert]
```

```
{-26 642 928, 0, 0, -26 341, -4390}
```

```
cert.g
```

```
-87 616
```

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

```
{1296, 106 648, 36 408, 141 760, 71 520, 1280, 176 872, 106 632, 211 984}
```

```
chi = (-12 + x) (-11 + x) (-9 + x)^2 (-7 + x)^12 (5 + x)^25
```

```
(-12 + x) (-11 + x) (-9 + x)^2 (-7 + x)^12 (5 + x)^25
```

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

```
{{2959, -1974, 408, -34, 1}, {2871, -1966, 408, -34, 1}}
```

```
A = {{2959, -1974, 408, -34, 1}, {2871, -1966, 408, -34, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} 2959 & -1974 & 408 & -34 & 1 \\ 2871 & -1966 & 408 & -34 & 1 \end{pmatrix}$$

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

```
{120 135, -80 838, 16 728, -1394, 41}
```

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

```
{2959 c[1] - 1974 c[2] + 408 c[3] - 34 c[4] + c[5],
 2871 c[1] - 1966 c[2] + 408 c[3] - 34 c[4] + c[5]}
```

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

```
120 135 c[1] - 80 838 c[2] + 16 728 c[3] - 1394 c[4] + 41 c[5]
```

```
cert = Flatten[Array[c, 5] /.
    FindInstance[120 135 c[1] - 80 838 c[2] + 16 728 c[3] - 1394 c[4] + 41 c[5] < 0 &&
      2959 c[1] - 1974 c[2] + 408 c[3] - 34 c[4] + c[5] ≥ 0 &&
      2871 c[1] - 1966 c[2] + 408 c[3] - 34 c[4] + c[5] ≥ 0, Array[c, 5], Integers]]
```

```
{1713, 18 832, 0, 0, 32 108 784}
```

```
GCD[1713, 18 832, 0, 0, 32 108 784]
```

```
1
```

```
Reverse[cert]
```

```
{32 108 784, 0, 0, 18 832, 1713}
```

```
cert.g
```

```
-89 817
```

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

```
{3183, 3095}
```

```
chi = (-11 + x)^3 (-8 + x) (-7 + x)^12 (5 + x)^25
```

```
(-11 + x)^3 (-8 + x) (-7 + x)^12 (5 + x)^25
```

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

```
{{-223, 131, -21, 1}, {-231, 131, -21, 1}}
```

```
A = {{-231, 131, -21, 1}, {-223, 131, -21, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} -231 & 131 & -21 & 1 \\ -223 & 131 & -21 & 1 \end{pmatrix}$$

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

```
{-8895, 5371, -861, 41}
```

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

```
{-231 c[1] + 131 c[2] - 21 c[3] + c[4], -223 c[1] + 131 c[2] - 21 c[3] + c[4]}
```

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

```
-8895 c[1] + 5371 c[2] - 861 c[3] + 41 c[4]
```

```
cert =
 Flatten[Array[c, 4] /. FindInstance[-8895 c[1] + 5371 c[2] - 861 c[3] + 41 c[4] < 0 &&
      -231 c[1] + 131 c[2] - 21 c[3] + c[4] ≥ 0 &&
      -223 c[1] + 131 c[2] - 21 c[3] + c[4] ≥ 0, Array[c, 4], Integers]]
```

```
{-62, 0, 0, -13493}
```

```
GCD[-62, 0, 0, -13493]
```

```
1
```

```
Reverse[cert]
```

```
{-13493, 0, 0, -62}
```

```
cert.g
```

```
-1723
```

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

```
{829, 333}
```

```
chi = (-9 + x)^3 (-7 + x)^9 (5 + x)^25 (4948 - 2465 x + 447 x^2 - 35 x^3 + x^4)
```

$$(-9+x)^3\,(-7+x)^9\,(5+x)^{25}\left(4948-2465\,x+447\,x^2-35\,x^3+x^4\right)$$

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

```
{{109305, -109534, 42159, -8180, 855, -46, 1},
 {109081, -109502, 42159, -8180, 855, -46, 1},
 {110313, -109790, 42175, -8180, 855, -46, 1},
 {111321, -110046, 42191, -8180, 855, -46, 1},
 {103761, -107622, 41943, -8172, 855, -46, 1},
 {103537, -107590, 41943, -8172, 855, -46, 1},
 {104769, -107878, 41959, -8172, 855, -46, 1},
 {105777, -108134, 41975, -8172, 855, -46, 1},
 {106785, -108390, 41991, -8172, 855, -46, 1},
 {99225, -105966, 41743, -8164, 855, -46, 1},
 {100233, -106222, 41759, -8164, 855, -46, 1},
 {101241, -106478, 41775, -8164, 855, -46, 1},
 {94689, -104310, 41543, -8156, 855, -46, 1},
 {95697, -104566, 41559, -8156, 855, -46, 1},
 {96705, -104822, 41575, -8156, 855, -46, 1},
 {91161, -102910, 41359, -8148, 855, -46, 1}}
```

```
A = {{109305, -109534, 42159, -8180, 855, -46, 1},
    {109081, -109502, 42159, -8180, 855, -46, 1}, {110313, -109790, 42175,
     -8180, 855, -46, 1}, {111321, -110046, 42191, -8180, 855, -46, 1},
    {103761, -107622, 41943, -8172, 855, -46, 1}, {103537, -107590, 41943,
     -8172, 855, -46, 1}, {104769, -107878, 41959, -8172, 855, -46, 1},
    {105777, -108134, 41975, -8172, 855, -46, 1}, {106785, -108390, 41991,
     -8172, 855, -46, 1}, {99225, -105966, 41743, -8164, 855, -46, 1},
    {100233, -106222, 41759, -8164, 855, -46, 1}, {101241, -106478, 41775,
     -8164, 855, -46, 1}, {94689, -104310, 41543, -8156, 855, -46, 1},
    {95697, -104566, 41559, -8156, 855, -46, 1}, {96705, -104822, 41575,
     -8156, 855, -46, 1}, {91161, -102910, 41359, -8148, 855, -46, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix}
109\,305 & -109\,534 & 42\,159 & -8180 & 855 & -46 & 1 \\
109\,081 & -109\,502 & 42\,159 & -8180 & 855 & -46 & 1 \\
110\,313 & -109\,790 & 42\,175 & -8180 & 855 & -46 & 1 \\
111\,321 & -110\,046 & 42\,191 & -8180 & 855 & -46 & 1 \\
103\,761 & -107\,622 & 41\,943 & -8172 & 855 & -46 & 1 \\
103\,537 & -107\,590 & 41\,943 & -8172 & 855 & -46 & 1 \\
104\,769 & -107\,878 & 41\,959 & -8172 & 855 & -46 & 1 \\
105\,777 & -108\,134 & 41\,975 & -8172 & 855 & -46 & 1 \\
106\,785 & -108\,390 & 41\,991 & -8172 & 855 & -46 & 1 \\
99\,225 & -105\,966 & 41\,743 & -8164 & 855 & -46 & 1 \\
100\,233 & -106\,222 & 41\,759 & -8164 & 855 & -46 & 1 \\
101\,241 & -106\,478 & 41\,775 & -8164 & 855 & -46 & 1 \\
94\,689 & -104\,310 & 41\,543 & -8156 & 855 & -46 & 1 \\
95\,697 & -104\,566 & 41\,559 & -8156 & 855 & -46 & 1 \\
96\,705 & -104\,822 & 41\,575 & -8156 & 855 & -46 & 1 \\
91\,161 & -102\,910 & 41\,359 & -8148 & 855 & -46 & 1
\end{pmatrix}$$

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

$$\{4\,493\,145, -4\,488\,726, 1\,727\,503, -335\,308, 35\,055, -1886, 41\}$$

```
Array[c, 7].Transpose[A]
```

$$\begin{aligned}
&\{109\,305\,c[1] - 109\,534\,c[2] + 42\,159\,c[3] - 8180\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 109\,081\,c[1] - 109\,502\,c[2] + 42\,159\,c[3] - 8180\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 110\,313\,c[1] - 109\,790\,c[2] + 42\,175\,c[3] - 8180\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 111\,321\,c[1] - 110\,046\,c[2] + 42\,191\,c[3] - 8180\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 103\,761\,c[1] - 107\,622\,c[2] + 41\,943\,c[3] - 8172\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 103\,537\,c[1] - 107\,590\,c[2] + 41\,943\,c[3] - 8172\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 104\,769\,c[1] - 107\,878\,c[2] + 41\,959\,c[3] - 8172\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 105\,777\,c[1] - 108\,134\,c[2] + 41\,975\,c[3] - 8172\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 106\,785\,c[1] - 108\,390\,c[2] + 41\,991\,c[3] - 8172\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 99\,225\,c[1] - 105\,966\,c[2] + 41\,743\,c[3] - 8164\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 100\,233\,c[1] - 106\,222\,c[2] + 41\,759\,c[3] - 8164\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 101\,241\,c[1] - 106\,478\,c[2] + 41\,775\,c[3] - 8164\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 94\,689\,c[1] - 104\,310\,c[2] + 41\,543\,c[3] - 8156\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 95\,697\,c[1] - 104\,566\,c[2] + 41\,559\,c[3] - 8156\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 96\,705\,c[1] - 104\,822\,c[2] + 41\,575\,c[3] - 8156\,c[4] + 855\,c[5] - 46\,c[6] + c[7], \\
&\ 91\,161\,c[1] - 102\,910\,c[2] + 41\,359\,c[3] - 8148\,c[4] + 855\,c[5] - 46\,c[6] + c[7]\}
\end{aligned}$$

```
Array[c, 7].g
```

$$\begin{aligned}
&4\,493\,145\,c[1] - 4\,488\,726\,c[2] + 1\,727\,503\,c[3] - \\
&\ 335\,308\,c[4] + 35\,055\,c[5] - 1886\,c[6] + 41\,c[7]
\end{aligned}$$

```
cert =
 Flatten[Array[c, 7] /. FindInstance[4 493 145 c[1] - 4 488 726 c[2] + 1 727 503 c[3] -
       335 308 c[4] + 35 055 c[5] - 1886 c[6] + 41 c[7] < 0 &&
     109 305 c[1] - 109 534 c[2] + 42 159 c[3] - 8180 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     109 081 c[1] - 109 502 c[2] + 42 159 c[3] - 8180 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     110 313 c[1] - 109 790 c[2] + 42 175 c[3] - 8180 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     111 321 c[1] - 110 046 c[2] + 42 191 c[3] - 8180 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     103 761 c[1] - 107 622 c[2] + 41 943 c[3] - 8172 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     103 537 c[1] - 107 590 c[2] + 41 943 c[3] - 8172 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     104 769 c[1] - 107 878 c[2] + 41 959 c[3] - 8172 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     105 777 c[1] - 108 134 c[2] + 41 975 c[3] - 8172 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     106 785 c[1] - 108 390 c[2] + 41 991 c[3] - 8172 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     99 225 c[1] - 105 966 c[2] + 41 743 c[3] - 8164 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     100 233 c[1] - 106 222 c[2] + 41 759 c[3] - 8164 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     101 241 c[1] - 106 478 c[2] + 41 775 c[3] - 8164 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     94 689 c[1] - 104 310 c[2] + 41 543 c[3] - 8156 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     95 697 c[1] - 104 566 c[2] + 41 559 c[3] - 8156 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     96 705 c[1] - 104 822 c[2] + 41 575 c[3] - 8156 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0 &&
     91 161 c[1] - 102 910 c[2] + 41 359 c[3] - 8148 c[4] + 855 c[5] - 46 c[6] + c[7] ≥ 0,
    Array[c, 7], Integers]]
{-5561, -31 263, -149 845, -427 982, 0, 0, 0}

GCD[-5561, -31 263, -149 845, -427 982, 0, 0, 0]
1

Reverse[cert]
{0, 0, 0, -427 982, -149 845, -31 263, -5561}

cert.g
-7 236 986

cert.Transpose[A]
{93 742, 338 990, 94 062, 94 382, 91 734, 336 982, 92 054,
 92 374, 92 694, 90 046, 90 366, 90 686, 88 358, 88 678, 88 998, 86 990}

chi = (-9 + x)^4 (-7 + x)^9 (5 + x)^25 (-544 + 213 x - 26 x^2 + x^3)
(-9 + x)^4 (-7 + x)^9 (5 + x)^25 (-544 + 213 x - 26 x^2 + x^3)
```

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

```
{{-12177, 10821, -3482, 522, -37, 1},
 {-12321, 10837, -3482, 522, -37, 1}, {-11529, 10677, -3474, 522, -37, 1},
 {-11673, 10693, -3474, 522, -37, 1}, {-11817, 10709, -3474, 522, -37, 1},
 {-11961, 10725, -3474, 522, -37, 1}, {-11025, 10549, -3466, 522, -37, 1},
 {-11169, 10565, -3466, 522, -37, 1}, {-11313, 10581, -3466, 522, -37, 1},
 {-11457, 10597, -3466, 522, -37, 1}, {-10521, 10421, -3458, 522, -37, 1},
 {-10665, 10437, -3458, 522, -37, 1}, {-10809, 10453, -3458, 522, -37, 1},
 {-10017, 10293, -3450, 522, -37, 1}, {-10161, 10309, -3450, 522, -37, 1},
 {-10305, 10325, -3450, 522, -37, 1}, {-9513, 10165, -3442, 522, -37, 1},
 {-9657, 10181, -3442, 522, -37, 1}, {-9009, 10037, -3434, 522, -37, 1}}
```

```
A = {{-12177, 10821, -3482, 522, -37, 1},
    {-12321, 10837, -3482, 522, -37, 1}, {-11529, 10677, -3474, 522, -37, 1},
    {-11673, 10693, -3474, 522, -37, 1}, {-11817, 10709, -3474, 522, -37, 1},
    {-11961, 10725, -3474, 522, -37, 1}, {-11025, 10549, -3466, 522, -37, 1},
    {-11169, 10565, -3466, 522, -37, 1}, {-11313, 10581, -3466, 522, -37, 1},
    {-11457, 10597, -3466, 522, -37, 1}, {-10521, 10421, -3458, 522, -37, 1},
    {-10665, 10437, -3458, 522, -37, 1}, {-10809, 10453, -3458, 522, -37, 1},
    {-10017, 10293, -3450, 522, -37, 1}, {-10161, 10309, -3450, 522, -37, 1},
    {-10305, 10325, -3450, 522, -37, 1}, {-9513, 10165, -3442, 522, -37, 1},
    {-9657, 10181, -3442, 522, -37, 1}, {-9009, 10037, -3434, 522, -37, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix}
-12177 & 10821 & -3482 & 522 & -37 & 1 \\
-12321 & 10837 & -3482 & 522 & -37 & 1 \\
-11529 & 10677 & -3474 & 522 & -37 & 1 \\
-11673 & 10693 & -3474 & 522 & -37 & 1 \\
-11817 & 10709 & -3474 & 522 & -37 & 1 \\
-11961 & 10725 & -3474 & 522 & -37 & 1 \\
-11025 & 10549 & -3466 & 522 & -37 & 1 \\
-11169 & 10565 & -3466 & 522 & -37 & 1 \\
-11313 & 10581 & -3466 & 522 & -37 & 1 \\
-11457 & 10597 & -3466 & 522 & -37 & 1 \\
-10521 & 10421 & -3458 & 522 & -37 & 1 \\
-10665 & 10437 & -3458 & 522 & -37 & 1 \\
-10809 & 10453 & -3458 & 522 & -37 & 1 \\
-10017 & 10293 & -3450 & 522 & -37 & 1 \\
-10161 & 10309 & -3450 & 522 & -37 & 1 \\
-10305 & 10325 & -3450 & 522 & -37 & 1 \\
-9513 & 10165 & -3442 & 522 & -37 & 1 \\
-9657 & 10181 & -3442 & 522 & -37 & 1 \\
-9009 & 10037 & -3434 & 522 & -37 & 1
\end{pmatrix}$$

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

```
{-493225, 440925, -142538, 21402, -1517, 41}
```

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

$$\{-12\,177\,c[1]+10\,821\,c[2]-3482\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-12\,321\,c[1]+10\,837\,c[2]-3482\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-11\,529\,c[1]+10\,677\,c[2]-3474\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-11\,673\,c[1]+10\,693\,c[2]-3474\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-11\,817\,c[1]+10\,709\,c[2]-3474\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-11\,961\,c[1]+10\,725\,c[2]-3474\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-11\,025\,c[1]+10\,549\,c[2]-3466\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-11\,169\,c[1]+10\,565\,c[2]-3466\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-11\,313\,c[1]+10\,581\,c[2]-3466\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-11\,457\,c[1]+10\,597\,c[2]-3466\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-10\,521\,c[1]+10\,421\,c[2]-3458\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-10\,665\,c[1]+10\,437\,c[2]-3458\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-10\,809\,c[1]+10\,453\,c[2]-3458\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-10\,017\,c[1]+10\,293\,c[2]-3450\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-10\,161\,c[1]+10\,309\,c[2]-3450\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-10\,305\,c[1]+10\,325\,c[2]-3450\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-9513\,c[1]+10\,165\,c[2]-3442\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-9657\,c[1]+10\,181\,c[2]-3442\,c[3]+522\,c[4]-37\,c[5]+c[6],$$
$$-9009\,c[1]+10\,037\,c[2]-3434\,c[3]+522\,c[4]-37\,c[5]+c[6]\}$$

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

$$-493\,225\,c[1]+440\,925\,c[2]-142\,538\,c[3]+21\,402\,c[4]-1517\,c[5]+41\,c[6]$$

```
cert = Flatten[Array[c, 6] /. FindInstance[
    -493 225 c[1] + 440 925 c[2] - 142 538 c[3] + 21 402 c[4] - 1517 c[5] + 41 c[6] < 0 &&
     -12 177 c[1] + 10 821 c[2] - 3482 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -12 321 c[1] + 10 837 c[2] - 3482 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -11 529 c[1] + 10 677 c[2] - 3474 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -11 673 c[1] + 10 693 c[2] - 3474 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -11 817 c[1] + 10 709 c[2] - 3474 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -11 961 c[1] + 10 725 c[2] - 3474 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -11 025 c[1] + 10 549 c[2] - 3466 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -11 169 c[1] + 10 565 c[2] - 3466 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -11 313 c[1] + 10 581 c[2] - 3466 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -11 457 c[1] + 10 597 c[2] - 3466 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -10 521 c[1] + 10 421 c[2] - 3458 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -10 665 c[1] + 10 437 c[2] - 3458 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -10 809 c[1] + 10 453 c[2] - 3458 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -10 017 c[1] + 10 293 c[2] - 3450 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -10 161 c[1] + 10 309 c[2] - 3450 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -10 305 c[1] + 10 325 c[2] - 3450 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -9513 c[1] + 10 165 c[2] - 3442 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -9657 c[1] + 10 181 c[2] - 3442 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -9009 c[1] + 10 037 c[2] - 3434 c[3] + 522 c[4] - 37 c[5] + c[6] ≥ 0,
    Array[c, 6], Integers]]
```

```
{2454, 22 092, 198 820, 0, 0, 483 133 968}
```

```
GCD[2454, 22 092, 198 820, 0, 0, 483 133 968]
```

```
2
```

```
cert = cert / 2
```

```
{1227, 11 046, 99 410, 0, 0, 241 566 984}
```

```
Reverse[cert]
```

```
{241 566 984, 0, 0, 99 410, 11 046, 1227}
```

```
cert.g
```

```
-185 761
```

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

```
{8951, 8999, 8703, 8751, 8799, 8847, 8503, 8551, 8599,
 8647, 8303, 8351, 8399, 8103, 8151, 8199, 7903, 7951, 7703}
```

```
chi = (-11 + x) (-9 + x)^3 (-7 + x)^10 (5 + x)^25 (64 - 17 x + x^2)
```

$$(-11+x)\,(-9+x)^3\,(-7+x)^{10}\,(5+x)^{25}\left(64-17\,x+x^2\right)$$

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

```
{{-15983, 13465, -4106, 582, -39, 1},
 {-15015, 13289, -4098, 582, -39, 1}, {-15191, 13305, -4098, 582, -39, 1},
 {-15367, 13321, -4098, 582, -39, 1}, {-14399, 13145, -4090, 582, -39, 1},
 {-14575, 13161, -4090, 582, -39, 1}, {-14751, 13177, -4090, 582, -39, 1},
 {-13815, 13001, -4082, 582, -39, 1}, {-13783, 13001, -4082, 582, -39, 1},
 {-13959, 13017, -4082, 582, -39, 1}, {-13167, 12857, -4074, 582, -39, 1}}
```

```
A = {{-15983, 13465, -4106, 582, -39, 1},
    {-15015, 13289, -4098, 582, -39, 1}, {-15191, 13305, -4098, 582, -39, 1},
    {-15367, 13321, -4098, 582, -39, 1}, {-14399, 13145, -4090, 582, -39, 1},
    {-14575, 13161, -4090, 582, -39, 1}, {-14751, 13177, -4090, 582, -39, 1},
    {-13815, 13001, -4082, 582, -39, 1}, {-13783, 13001, -4082, 582, -39, 1},
    {-13959, 13017, -4082, 582, -39, 1}, {-13167, 12857, -4074, 582, -39, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix}
-15983 & 13465 & -4106 & 582 & -39 & 1 \\
-15015 & 13289 & -4098 & 582 & -39 & 1 \\
-15191 & 13305 & -4098 & 582 & -39 & 1 \\
-15367 & 13321 & -4098 & 582 & -39 & 1 \\
-14399 & 13145 & -4090 & 582 & -39 & 1 \\
-14575 & 13161 & -4090 & 582 & -39 & 1 \\
-14751 & 13177 & -4090 & 582 & -39 & 1 \\
-13815 & 13001 & -4082 & 582 & -39 & 1 \\
-13783 & 13001 & -4082 & 582 & -39 & 1 \\
-13959 & 13017 & -4082 & 582 & -39 & 1 \\
-13167 & 12857 & -4074 & 582 & -39 & 1
\end{pmatrix}$$

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

```
{-639015, 548097, -168122, 23862, -1599, 41}
```

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

```
{-15983 c[1] + 13465 c[2] - 4106 c[3] + 582 c[4] - 39 c[5] + c[6],
 -15015 c[1] + 13289 c[2] - 4098 c[3] + 582 c[4] - 39 c[5] + c[6],
 -15191 c[1] + 13305 c[2] - 4098 c[3] + 582 c[4] - 39 c[5] + c[6],
 -15367 c[1] + 13321 c[2] - 4098 c[3] + 582 c[4] - 39 c[5] + c[6],
 -14399 c[1] + 13145 c[2] - 4090 c[3] + 582 c[4] - 39 c[5] + c[6],
 -14575 c[1] + 13161 c[2] - 4090 c[3] + 582 c[4] - 39 c[5] + c[6],
 -14751 c[1] + 13177 c[2] - 4090 c[3] + 582 c[4] - 39 c[5] + c[6],
 -13815 c[1] + 13001 c[2] - 4082 c[3] + 582 c[4] - 39 c[5] + c[6],
 -13783 c[1] + 13001 c[2] - 4082 c[3] + 582 c[4] - 39 c[5] + c[6],
 -13959 c[1] + 13017 c[2] - 4082 c[3] + 582 c[4] - 39 c[5] + c[6],
 -13167 c[1] + 12857 c[2] - 4074 c[3] + 582 c[4] - 39 c[5] + c[6]}
```

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

```
-639015 c[1] + 548097 c[2] - 168122 c[3] + 23862 c[4] - 1599 c[5] + 41 c[6]
```

```
cert = Flatten[Array[c, 6] /. FindInstance[
    -639 015 c[1] + 548 097 c[2] - 168 122 c[3] + 23 862 c[4] - 1599 c[5] + 41 c[6] < 0 &&
     -15 983 c[1] + 13 465 c[2] - 4106 c[3] + 582 c[4] - 39 c[5] + c[6] ≥ 0 &&
     -15 015 c[1] + 13 289 c[2] - 4098 c[3] + 582 c[4] - 39 c[5] + c[6] ≥ 0 &&
     -15 191 c[1] + 13 305 c[2] - 4098 c[3] + 582 c[4] - 39 c[5] + c[6] ≥ 0 &&
     -15 367 c[1] + 13 321 c[2] - 4098 c[3] + 582 c[4] - 39 c[5] + c[6] ≥ 0 &&
     -14 399 c[1] + 13 145 c[2] - 4090 c[3] + 582 c[4] - 39 c[5] + c[6] ≥ 0 &&
     -14 575 c[1] + 13 161 c[2] - 4090 c[3] + 582 c[4] - 39 c[5] + c[6] ≥ 0 &&
     -14 751 c[1] + 13 177 c[2] - 4090 c[3] + 582 c[4] - 39 c[5] + c[6] ≥ 0 &&
     -13 815 c[1] + 13 001 c[2] - 4082 c[3] + 582 c[4] - 39 c[5] + c[6] ≥ 0 &&
     -13 783 c[1] + 13 001 c[2] - 4082 c[3] + 582 c[4] - 39 c[5] + c[6] ≥ 0 &&
     -13 959 c[1] + 13 017 c[2] - 4082 c[3] + 582 c[4] - 39 c[5] + c[6] ≥ 0 &&
     -13 167 c[1] + 12 857 c[2] - 4074 c[3] + 582 c[4] - 39 c[5] + c[6] ≥ 0,
    Array[c, 6], Integers]]
```

```
{2150, 10 679, 26 648, 0, 0, 0}
```

```
GCD[2150, 10 679, 26 648, 0, 0, 0]
```

```
1
```

```
Reverse[cert]
```

```
{0, 0, 0, 26 648, 10 679, 2150}
```

```
cert.g
```

```
-869 443
```

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

```
{12 597, 427 477, 219 941, 12 405, 427 285,
 219 749, 12 213, 358 293, 427 093, 219 557, 426 901}
```

```
chi = (-11 + x)^2 (-9 + x)^2 (-7 + x)^10 (5 + x)^25 (52 - 15 x + x^2)
```

```
(-11 + x)^2 (-9 + x)^2 (-7 + x)^10 (5 + x)^25 (52 - 15 x + x^2)
```

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

```
{{-12 573, 11 153, -3550, 526, -37, 1}, {-12 717, 11 169, -3550, 526, -37, 1},
 {-11 781, 10 993, -3542, 526, -37, 1}, {-11 925, 11 009, -3542, 526, -37, 1},
 {-12 069, 11 025, -3542, 526, -37, 1}, {-11 277, 10 865, -3534, 526, -37, 1},
 {-11 421, 10 881, -3534, 526, -37, 1}, {-10 773, 10 737, -3526, 526, -37, 1}}
```

```
A = {{-12 573, 11 153, -3550, 526, -37, 1}, {-12 717, 11 169, -3550, 526, -37, 1},
   {-11 781, 10 993, -3542, 526, -37, 1}, {-11 925, 11 009, -3542, 526, -37, 1},
   {-12 069, 11 025, -3542, 526, -37, 1}, {-11 277, 10 865, -3534, 526, -37, 1},
   {-11 421, 10 881, -3534, 526, -37, 1}, {-10 773, 10 737, -3526, 526, -37, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} -12573 & 11153 & -3550 & 526 & -37 & 1 \\ -12717 & 11169 & -3550 & 526 & -37 & 1 \\ -11781 & 10993 & -3542 & 526 & -37 & 1 \\ -11925 & 11009 & -3542 & 526 & -37 & 1 \\ -12069 & 11025 & -3542 & 526 & -37 & 1 \\ -11277 & 10865 & -3534 & 526 & -37 & 1 \\ -11421 & 10881 & -3534 & 526 & -37 & 1 \\ -10773 & 10737 & -3526 & 526 & -37 & 1 \end{pmatrix}$$

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

```
{-518725, 457225, -145502, 21566, -1517, 41}
```

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

```
{-12573 c[1] + 11153 c[2] - 3550 c[3] + 526 c[4] - 37 c[5] + c[6],
 -12717 c[1] + 11169 c[2] - 3550 c[3] + 526 c[4] - 37 c[5] + c[6],
 -11781 c[1] + 10993 c[2] - 3542 c[3] + 526 c[4] - 37 c[5] + c[6],
 -11925 c[1] + 11009 c[2] - 3542 c[3] + 526 c[4] - 37 c[5] + c[6],
 -12069 c[1] + 11025 c[2] - 3542 c[3] + 526 c[4] - 37 c[5] + c[6],
 -11277 c[1] + 10865 c[2] - 3534 c[3] + 526 c[4] - 37 c[5] + c[6],
 -11421 c[1] + 10881 c[2] - 3534 c[3] + 526 c[4] - 37 c[5] + c[6],
 -10773 c[1] + 10737 c[2] - 3526 c[3] + 526 c[4] - 37 c[5] + c[6]}
```

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

```
-518725 c[1] + 457225 c[2] - 145502 c[3] + 21566 c[4] - 1517 c[5] + 41 c[6]
```

```
cert = Flatten[Array[c, 6] /. FindInstance[
    -518725 c[1] + 457225 c[2] - 145502 c[3] + 21566 c[4] - 1517 c[5] + 41 c[6] < 0 &&
     -12573 c[1] + 11153 c[2] - 3550 c[3] + 526 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -12717 c[1] + 11169 c[2] - 3550 c[3] + 526 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -11781 c[1] + 10993 c[2] - 3542 c[3] + 526 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -11925 c[1] + 11009 c[2] - 3542 c[3] + 526 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -12069 c[1] + 11025 c[2] - 3542 c[3] + 526 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -11277 c[1] + 10865 c[2] - 3534 c[3] + 526 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -11421 c[1] + 10881 c[2] - 3534 c[3] + 526 c[4] - 37 c[5] + c[6] ≥ 0 &&
     -10773 c[1] + 10737 c[2] - 3526 c[3] + 526 c[4] - 37 c[5] + c[6] ≥ 0,
    Array[c, 6], Integers]]
```

```
{2995, 15614, 38390, 0, 0, 0}
```

```
GCD[2995, 15614, 38390, 0, 0, 0]
```

```
1
```

```
Reverse[cert]
```

```
{0, 0, 0, 38390, 15614, 2995}
```

```
cert.g
```

```
-292005
```

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

$$\{202\,307, 20\,851, 383\,227, 201\,771, 20\,315, 201\,235, 19\,779, 19\,243\}$$

```
chi = (-11 + x) (-9 + x)^2 (-8 + x) (-7 + x)^8 (5 + x)^25 (59 - 16 x + x^2)^2
```

$$(-11 + x)\,(-9 + x)^2\,(-8 + x)\,(-7 + x)^8\,(5 + x)^{25}\,\left(59 - 16\,x + x^2\right)^2$$

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

$$\{\{122\,661, -116\,454, 43\,519, -8300, 859, -46, 1\},$$
$$\{117\,117, -114\,542, 43\,303, -8292, 859, -46, 1\},$$
$$\{118\,413, -114\,830, 43\,319, -8292, 859, -46, 1\},$$
$$\{111\,573, -112\,630, 43\,087, -8284, 859, -46, 1\},$$
$$\{112\,869, -112\,918, 43\,103, -8284, 859, -46, 1\},$$
$$\{106\,029, -110\,718, 42\,871, -8276, 859, -46, 1\},$$
$$\{107\,037, -110\,974, 42\,887, -8276, 859, -46, 1\}\}$$

```
A = {{122 661, -116 454, 43 519, -8300, 859, -46, 1},
    {117 117, -114 542, 43 303, -8292, 859, -46, 1}, {118 413, -114 830, 43 319,
     -8292, 859, -46, 1}, {111 573, -112 630, 43 087, -8284, 859, -46, 1},
    {112 869, -112 918, 43 103, -8284, 859, -46, 1}, {106 029, -110 718, 42 871,
     -8276, 859, -46, 1}, {107 037, -110 974, 42 887, -8276, 859, -46, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} 122\,661 & -116\,454 & 43\,519 & -8300 & 859 & -46 & 1 \\ 117\,117 & -114\,542 & 43\,303 & -8292 & 859 & -46 & 1 \\ 118\,413 & -114\,830 & 43\,319 & -8292 & 859 & -46 & 1 \\ 111\,573 & -112\,630 & 43\,087 & -8284 & 859 & -46 & 1 \\ 112\,869 & -112\,918 & 43\,103 & -8284 & 859 & -46 & 1 \\ 106\,029 & -110\,718 & 42\,871 & -8276 & 859 & -46 & 1 \\ 107\,037 & -110\,974 & 42\,887 & -8276 & 859 & -46 & 1 \end{pmatrix}$$

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

$$\{4\,704\,685, -4\,657\,158, 1\,770\,487, -339\,772, 35\,219, -1886, 41\}$$

```
Array[c, 7].Transpose[A]
```

$$\{122\,661\,c[1] - 116\,454\,c[2] + 43\,519\,c[3] - 8300\,c[4] + 859\,c[5] - 46\,c[6] + c[7],$$
$$117\,117\,c[1] - 114\,542\,c[2] + 43\,303\,c[3] - 8292\,c[4] + 859\,c[5] - 46\,c[6] + c[7],$$
$$118\,413\,c[1] - 114\,830\,c[2] + 43\,319\,c[3] - 8292\,c[4] + 859\,c[5] - 46\,c[6] + c[7],$$
$$111\,573\,c[1] - 112\,630\,c[2] + 43\,087\,c[3] - 8284\,c[4] + 859\,c[5] - 46\,c[6] + c[7],$$
$$112\,869\,c[1] - 112\,918\,c[2] + 43\,103\,c[3] - 8284\,c[4] + 859\,c[5] - 46\,c[6] + c[7],$$
$$106\,029\,c[1] - 110\,718\,c[2] + 42\,871\,c[3] - 8276\,c[4] + 859\,c[5] - 46\,c[6] + c[7],$$
$$107\,037\,c[1] - 110\,974\,c[2] + 42\,887\,c[3] - 8276\,c[4] + 859\,c[5] - 46\,c[6] + c[7]\}$$

```
Array[c, 7].g
```

```
4 704 685 c[1] - 4 657 158 c[2] + 1 770 487 c[3] -
 339 772 c[4] + 35 219 c[5] - 1886 c[6] + 41 c[7]
```

```
cert =
 Flatten[Array[c, 7] /. FindInstance[4 704 685 c[1] - 4 657 158 c[2] + 1 770 487 c[3] -
       339 772 c[4] + 35 219 c[5] - 1886 c[6] + 41 c[7] < 0 &&
     122 661 c[1] - 116 454 c[2] + 43 519 c[3] - 8300 c[4] + 859 c[5] - 46 c[6] + c[7] ≥ 0 &&
     117 117 c[1] - 114 542 c[2] + 43 303 c[3] - 8292 c[4] + 859 c[5] - 46 c[6] + c[7] ≥ 0 &&
     118 413 c[1] - 114 830 c[2] + 43 319 c[3] - 8292 c[4] + 859 c[5] - 46 c[6] + c[7] ≥ 0 &&
     111 573 c[1] - 112 630 c[2] + 43 087 c[3] - 8284 c[4] + 859 c[5] - 46 c[6] + c[7] ≥ 0 &&
     112 869 c[1] - 112 918 c[2] + 43 103 c[3] - 8284 c[4] + 859 c[5] - 46 c[6] + c[7] ≥ 0 &&
     106 029 c[1] - 110 718 c[2] + 42 871 c[3] - 8276 c[4] + 859 c[5] - 46 c[6] + c[7] ≥ 0 &&
     107 037 c[1] - 110 974 c[2] + 42 887 c[3] - 8276 c[4] + 859 c[5] - 46 c[6] + c[7] ≥ 0,
    Array[c, 7], Integers]]
```

```
{-8185, -53 247, -295 413, -922 821, 0, 0, 0}
```

```
GCD[-8185, -53 247, -295 413, -922 821, 0, 0, 0]
```

```
1
```

```
Reverse[cert]
```

```
{0, 0, 0, -922 821, -295 413, -53 247, -8185}
```

```
cert.g
```

```
-4 294 018
```

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

```
{181 806, 177 822, 178 590, 173 838, 174 606, 169 854, 823 998}
```

```
chi = (-9 + x)^5 (-7 + x)^8 (5 + x)^25 (-412 + 179 x - 24 x^2 + x^3)
```

```
(-9 + x)^5 (-7 + x)^8 (5 + x)^25 (-412 + 179 x - 24 x^2 + x^3)
```

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

```
{{-9527, 8669, -2934, 466, -35, 1}, {-8911, 8525, -2926, 466, -35, 1},
 {-9055, 8541, -2926, 466, -35, 1}, {-9023, 8541, -2926, 466, -35, 1},
 {-9167, 8557, -2926, 466, -35, 1}, {-9135, 8557, -2926, 466, -35, 1},
 {-8295, 8381, -2918, 466, -35, 1}, {-8407, 8397, -2918, 466, -35, 1},
 {-8519, 8413, -2918, 466, -35, 1}, {-8663, 8429, -2918, 466, -35, 1},
 {-8631, 8429, -2918, 466, -35, 1}, {-8775, 8445, -2918, 466, -35, 1},
 {-7903, 8269, -2910, 466, -35, 1}, {-8015, 8285, -2910, 466, -35, 1},
 {-8159, 8301, -2910, 466, -35, 1}, {-8127, 8301, -2910, 466, -35, 1},
 {-8271, 8317, -2910, 466, -35, 1}, {-7399, 8141, -2902, 466, -35, 1},
 {-7511, 8157, -2902, 466, -35, 1}, {-7623, 8173, -2902, 466, -35, 1},
 {-7767, 8189, -2902, 466, -35, 1}, {-7007, 8029, -2894, 466, -35, 1},
 {-7119, 8045, -2894, 466, -35, 1}, {-6503, 7901, -2886, 466, -35, 1},
 {-6615, 7917, -2886, 466, -35, 1}, {-6111, 7789, -2878, 466, -35, 1}}
```

```
A = {{-9527, 8669, -2934, 466, -35, 1}, {-8911, 8525, -2926, 466, -35, 1},
    {-9055, 8541, -2926, 466, -35, 1}, {-9023, 8541, -2926, 466, -35, 1},
    {-9167, 8557, -2926, 466, -35, 1}, {-9135, 8557, -2926, 466, -35, 1},
    {-8295, 8381, -2918, 466, -35, 1}, {-8407, 8397, -2918, 466, -35, 1},
    {-8519, 8413, -2918, 466, -35, 1}, {-8663, 8429, -2918, 466, -35, 1},
    {-8631, 8429, -2918, 466, -35, 1}, {-8775, 8445, -2918, 466, -35, 1},
    {-7903, 8269, -2910, 466, -35, 1}, {-8015, 8285, -2910, 466, -35, 1},
    {-8159, 8301, -2910, 466, -35, 1}, {-8127, 8301, -2910, 466, -35, 1},
    {-8271, 8317, -2910, 466, -35, 1}, {-7399, 8141, -2902, 466, -35, 1},
    {-7511, 8157, -2902, 466, -35, 1}, {-7623, 8173, -2902, 466, -35, 1},
    {-7767, 8189, -2902, 466, -35, 1}, {-7007, 8029, -2894, 466, -35, 1},
    {-7119, 8045, -2894, 466, -35, 1}, {-6503, 7901, -2886, 466, -35, 1},
    {-6615, 7917, -2886, 466, -35, 1}, {-6111, 7789, -2878, 466, -35, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} -9527 & 8669 & -2934 & 466 & -35 & 1 \\ -8911 & 8525 & -2926 & 466 & -35 & 1 \\ -9055 & 8541 & -2926 & 466 & -35 & 1 \\ -9023 & 8541 & -2926 & 466 & -35 & 1 \\ -9167 & 8557 & -2926 & 466 & -35 & 1 \\ -9135 & 8557 & -2926 & 466 & -35 & 1 \\ -8295 & 8381 & -2918 & 466 & -35 & 1 \\ -8407 & 8397 & -2918 & 466 & -35 & 1 \\ -8519 & 8413 & -2918 & 466 & -35 & 1 \\ -8663 & 8429 & -2918 & 466 & -35 & 1 \\ -8631 & 8429 & -2918 & 466 & -35 & 1 \\ -8775 & 8445 & -2918 & 466 & -35 & 1 \\ -7903 & 8269 & -2910 & 466 & -35 & 1 \\ -8015 & 8285 & -2910 & 466 & -35 & 1 \\ -8159 & 8301 & -2910 & 466 & -35 & 1 \\ -8127 & 8301 & -2910 & 466 & -35 & 1 \\ -8271 & 8317 & -2910 & 466 & -35 & 1 \\ -7399 & 8141 & -2902 & 466 & -35 & 1 \\ -7511 & 8157 & -2902 & 466 & -35 & 1 \\ -7623 & 8173 & -2902 & 466 & -35 & 1 \\ -7767 & 8189 & -2902 & 466 & -35 & 1 \\ -7007 & 8029 & -2894 & 466 & -35 & 1 \\ -7119 & 8045 & -2894 & 466 & -35 & 1 \\ -6503 & 7901 & -2886 & 466 & -35 & 1 \\ -6615 & 7917 & -2886 & 466 & -35 & 1 \\ -6111 & 7789 & -2878 & 466 & -35 & 1 \end{pmatrix}$$

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

$$\{-372\,095,\ 350\,101,\ -119\,942,\ 19\,106,\ -1435,\ 41\}$$

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

$$\{-9527\,c[1]+8669\,c[2]-2934\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-8911\,c[1]+8525\,c[2]-2926\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-9055\,c[1]+8541\,c[2]-2926\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-9023\,c[1]+8541\,c[2]-2926\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-9167\,c[1]+8557\,c[2]-2926\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-9135\,c[1]+8557\,c[2]-2926\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-8295\,c[1]+8381\,c[2]-2918\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-8407\,c[1]+8397\,c[2]-2918\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-8519\,c[1]+8413\,c[2]-2918\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-8663\,c[1]+8429\,c[2]-2918\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-8631\,c[1]+8429\,c[2]-2918\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-8775\,c[1]+8445\,c[2]-2918\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-7903\,c[1]+8269\,c[2]-2910\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-8015\,c[1]+8285\,c[2]-2910\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-8159\,c[1]+8301\,c[2]-2910\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-8127\,c[1]+8301\,c[2]-2910\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-8271\,c[1]+8317\,c[2]-2910\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-7399\,c[1]+8141\,c[2]-2902\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-7511\,c[1]+8157\,c[2]-2902\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-7623\,c[1]+8173\,c[2]-2902\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-7767\,c[1]+8189\,c[2]-2902\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-7007\,c[1]+8029\,c[2]-2894\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-7119\,c[1]+8045\,c[2]-2894\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-6503\,c[1]+7901\,c[2]-2886\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-6615\,c[1]+7917\,c[2]-2886\,c[3]+466\,c[4]-35\,c[5]+c[6],$$
$$-6111\,c[1]+7789\,c[2]-2878\,c[3]+466\,c[4]-35\,c[5]+c[6]\}$$

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

$$-372\,095\,c[1]+350\,101\,c[2]-119\,942\,c[3]+19\,106\,c[4]-1435\,c[5]+41\,c[6]$$

```
cert = Flatten[Array[c, 6] /. FindInstance[
    -372 095 c[1] + 350 101 c[2] - 119 942 c[3] + 19 106 c[4] - 1435 c[5] + 41 c[6] < 0 &&
     -9527 c[1] + 8669 c[2] - 2934 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8911 c[1] + 8525 c[2] - 2926 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -9055 c[1] + 8541 c[2] - 2926 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -9023 c[1] + 8541 c[2] - 2926 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -9167 c[1] + 8557 c[2] - 2926 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -9135 c[1] + 8557 c[2] - 2926 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8295 c[1] + 8381 c[2] - 2918 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8407 c[1] + 8397 c[2] - 2918 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8519 c[1] + 8413 c[2] - 2918 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8663 c[1] + 8429 c[2] - 2918 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8631 c[1] + 8429 c[2] - 2918 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8775 c[1] + 8445 c[2] - 2918 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -7903 c[1] + 8269 c[2] - 2910 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8015 c[1] + 8285 c[2] - 2910 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8159 c[1] + 8301 c[2] - 2910 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8127 c[1] + 8301 c[2] - 2910 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8271 c[1] + 8317 c[2] - 2910 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -7399 c[1] + 8141 c[2] - 2902 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -7511 c[1] + 8157 c[2] - 2902 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -7623 c[1] + 8173 c[2] - 2902 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -7767 c[1] + 8189 c[2] - 2902 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -7007 c[1] + 8029 c[2] - 2894 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -7119 c[1] + 8045 c[2] - 2894 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -6503 c[1] + 7901 c[2] - 2886 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -6615 c[1] + 7917 c[2] - 2886 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -6111 c[1] + 7789 c[2] - 2878 c[3] + 466 c[4] - 35 c[5] + c[6] ≥ 0,
    Array[c, 6], Integers]]
```

```
{3851, 26 961, 188 720, 0, 0, 356 804 550}
```

```
GCD[3851, 26 961, 188 720, 0, 0, 356 804 550]
```

```
1
```

```
Reverse[cert]
```

```
{356 804 550, 0, 0, 188 720, 26 961, 3851}
```

```
cert.g
```

```
-332 474
```

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

```
{136 502, 136 094, 12 926, 136 158, 12 990, 136 222, 135 686, 135 750,
 135 814, 12 646, 135 878, 12 710, 135 406, 135 470, 12 302, 135 534, 12 366,
 135 062, 135 126, 135 190, 12 022, 134 782, 134 846, 134 438, 134 502, 134 158}
```

```
chi = (-11 + x) (-9 + x)^4 (-7 + x)^8 (-5 + x) (5 + x)^25 (68 - 17 x + x^2)
```

$$(-11+x)\,(-9+x)^4\,(-7+x)^8\,(-5+x)\,(5+x)^{25}\,\left(68-17\,x+x^2\right)$$

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

```
{{81543, -86052, 34891, -7120, 781, -44, 1},
 {82775, -86340, 34907, -7120, 781, -44, 1},
 {77231, -84428, 34691, -7112, 781, -44, 1},
 {78463, -84716, 34707, -7112, 781, -44, 1},
 {79695, -85004, 34723, -7112, 781, -44, 1},
 {79407, -84972, 34723, -7112, 781, -44, 1},
 {72919, -82804, 34491, -7104, 781, -44, 1},
 {74151, -83092, 34507, -7104, 781, -44, 1},
 {73927, -83060, 34507, -7104, 781, -44, 1},
 {75159, -83348, 34523, -7104, 781, -44, 1},
 {68607, -81180, 34291, -7096, 781, -44, 1},
 {69615, -81436, 34307, -7096, 781, -44, 1}}
```

```
A = {{81543, -86052, 34891, -7120, 781, -44, 1},
   {82775, -86340, 34907, -7120, 781, -44, 1},
   {77231, -84428, 34691, -7112, 781, -44, 1}, {78463, -84716, 34707,
    -7112, 781, -44, 1}, {79695, -85004, 34723, -7112, 781, -44, 1},
   {79407, -84972, 34723, -7112, 781, -44, 1}, {72919, -82804, 34491,
    -7104, 781, -44, 1}, {74151, -83092, 34507, -7104, 781, -44, 1},
   {73927, -83060, 34507, -7104, 781, -44, 1}, {75159, -83348, 34523,
    -7104, 781, -44, 1}, {68607, -81180, 34291, -7096, 781, -44, 1},
   {69615, -81436, 34307, -7096, 781, -44, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix}
81543 & -86052 & 34891 & -7120 & 781 & -44 & 1\\
82775 & -86340 & 34907 & -7120 & 781 & -44 & 1\\
77231 & -84428 & 34691 & -7112 & 781 & -44 & 1\\
78463 & -84716 & 34707 & -7112 & 781 & -44 & 1\\
79695 & -85004 & 34723 & -7112 & 781 & -44 & 1\\
79407 & -84972 & 34723 & -7112 & 781 & -44 & 1\\
72919 & -82804 & 34491 & -7104 & 781 & -44 & 1\\
74151 & -83092 & 34507 & -7104 & 781 & -44 & 1\\
73927 & -83060 & 34507 & -7104 & 781 & -44 & 1\\
75159 & -83348 & 34523 & -7104 & 781 & -44 & 1\\
68607 & -81180 & 34291 & -7096 & 781 & -44 & 1\\
69615 & -81436 & 34307 & -7096 & 781 & -44 & 1
\end{pmatrix}$$

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

```
{3383255, -3537084, 1430763, -291896, 32021, -1804, 41}
```

```
Array[c, 7].Transpose[A]
```

```
{81 543 c[1] - 86 052 c[2] + 34 891 c[3] - 7120 c[4] + 781 c[5] - 44 c[6] + c[7],
 82 775 c[1] - 86 340 c[2] + 34 907 c[3] - 7120 c[4] + 781 c[5] - 44 c[6] + c[7],
 77 231 c[1] - 84 428 c[2] + 34 691 c[3] - 7112 c[4] + 781 c[5] - 44 c[6] + c[7],
 78 463 c[1] - 84 716 c[2] + 34 707 c[3] - 7112 c[4] + 781 c[5] - 44 c[6] + c[7],
 79 695 c[1] - 85 004 c[2] + 34 723 c[3] - 7112 c[4] + 781 c[5] - 44 c[6] + c[7],
 79 407 c[1] - 84 972 c[2] + 34 723 c[3] - 7112 c[4] + 781 c[5] - 44 c[6] + c[7],
 72 919 c[1] - 82 804 c[2] + 34 491 c[3] - 7104 c[4] + 781 c[5] - 44 c[6] + c[7],
 74 151 c[1] - 83 092 c[2] + 34 507 c[3] - 7104 c[4] + 781 c[5] - 44 c[6] + c[7],
 73 927 c[1] - 83 060 c[2] + 34 507 c[3] - 7104 c[4] + 781 c[5] - 44 c[6] + c[7],
 75 159 c[1] - 83 348 c[2] + 34 523 c[3] - 7104 c[4] + 781 c[5] - 44 c[6] + c[7],
 68 607 c[1] - 81 180 c[2] + 34 291 c[3] - 7096 c[4] + 781 c[5] - 44 c[6] + c[7],
 69 615 c[1] - 81 436 c[2] + 34 307 c[3] - 7096 c[4] + 781 c[5] - 44 c[6] + c[7]}
```

```
Array[c, 7].g
```

```
3 383 255 c[1] - 3 537 084 c[2] + 1 430 763 c[3] -
 291 896 c[4] + 32 021 c[5] - 1804 c[6] + 41 c[7]
```

```
cert =
 Flatten[Array[c, 7] /. FindInstance[3 383 255 c[1] - 3 537 084 c[2] + 1 430 763 c[3] -
       291 896 c[4] + 32 021 c[5] - 1804 c[6] + 41 c[7] < 0 &&
     81 543 c[1] - 86 052 c[2] + 34 891 c[3] - 7120 c[4] + 781 c[5] - 44 c[6] + c[7] ≥ 0 &&
     82 775 c[1] - 86 340 c[2] + 34 907 c[3] - 7120 c[4] + 781 c[5] - 44 c[6] + c[7] ≥ 0 &&
     77 231 c[1] - 84 428 c[2] + 34 691 c[3] - 7112 c[4] + 781 c[5] - 44 c[6] + c[7] ≥ 0 &&
     78 463 c[1] - 84 716 c[2] + 34 707 c[3] - 7112 c[4] + 781 c[5] - 44 c[6] + c[7] ≥ 0 &&
     79 695 c[1] - 85 004 c[2] + 34 723 c[3] - 7112 c[4] + 781 c[5] - 44 c[6] + c[7] ≥ 0 &&
     79 407 c[1] - 84 972 c[2] + 34 723 c[3] - 7112 c[4] + 781 c[5] - 44 c[6] + c[7] ≥ 0 &&
     72 919 c[1] - 82 804 c[2] + 34 491 c[3] - 7104 c[4] + 781 c[5] - 44 c[6] + c[7] ≥ 0 &&
     74 151 c[1] - 83 092 c[2] + 34 507 c[3] - 7104 c[4] + 781 c[5] - 44 c[6] + c[7] ≥ 0 &&
     73 927 c[1] - 83 060 c[2] + 34 507 c[3] - 7104 c[4] + 781 c[5] - 44 c[6] + c[7] ≥ 0 &&
     75 159 c[1] - 83 348 c[2] + 34 523 c[3] - 7104 c[4] + 781 c[5] - 44 c[6] + c[7] ≥ 0 &&
     68 607 c[1] - 81 180 c[2] + 34 291 c[3] - 7096 c[4] + 781 c[5] - 44 c[6] + c[7] ≥ 0 &&
     69 615 c[1] - 81 436 c[2] + 34 307 c[3] - 7096 c[4] + 781 c[5] - 44 c[6] + c[7] ≥ 0,
    Array[c, 7], Integers]]
```

```
{10 481, 50 373, 99 745, 0, 0, 0, 0}
```

```
GCD[10 481, 50 373, 99 745, 0, 0, 0, 0]
```

```
1
```

```
Reverse[cert]
```

```
{0, 0, 0, 0, 99 745, 50 373, 10 481}
```

```
cert.g
```

```
-2 181 242
```

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

```
{157 582, 158 670, 16 820 262, 16 821 350, 16 822 438, 15 415 846,
 33 482 942, 33 484 030, 32 748 222, 32 749 310, 50 145 622, 49 410 902}
```

```
chi = (-9 + x)^4 (-7 + x)^7 (5 + x)^25 (-25 904 + 17 829 x - 4784 x^2 + 626 x^3 - 40 x^4 + x^5)
```

$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\left(-25\,904+17\,829\,x-4784\,x^2+626\,x^3-40\,x^4+x^5\right)$$

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

```
{{-580 545, 687 539, -330 721, 84 747, -12 587, 1089, -51, 1},
 {-578 529, 687 027, -330 689, 84 747, -12 587, 1089, -51, 1},
 {-541 737, 668 611, -327 297, 84 475, -12 579, 1089, -51, 1},
 {-552 825, 672 435, -327 729, 84 491, -12 579, 1089, -51, 1},
 {-550 809, 671 923, -327 697, 84 491, -12 579, 1089, -51, 1},
 {-548 793, 671 411, -327 665, 84 491, -12 579, 1089, -51, 1},
 {-559 305, 675 171, -328 097, 84 507, -12 579, 1089, -51, 1},
 {-557 289, 674 659, -328 065, 84 507, -12 579, 1089, -51, 1},
 {-557 865, 674 723, -328 065, 84 507, -12 579, 1089, -51, 1},
 {-514 017, 653 507, -324 305, 84 219, -12 571, 1089, -51, 1},
 {-512 001, 652 995, -324 273, 84 219, -12 571, 1089, -51, 1},
 {-521 073, 656 307, -324 673, 84 235, -12 571, 1089, -51, 1},
 {-519 057, 655 795, -324 641, 84 235, -12 571, 1089, -51, 1},
 {-530 145, 659 619, -325 073, 84 251, -12 571, 1089, -51, 1},
 {-528 129, 659 107, -325 041, 84 251, -12 571, 1089, -51, 1},
 {-537 201, 662 419, -325 441, 84 267, -12 571, 1089, -51, 1},
 {-534 609, 661 843, -325 409, 84 267, -12 571, 1089, -51, 1},
 {-482 265, 637 379, -321 249, 83 963, -12 563, 1089, -51, 1},
 {-489 321, 640 179, -321 617, 83 979, -12 563, 1089, -51, 1},
 {-498 393, 643 491, -322 017, 83 995, -12 563, 1089, -51, 1},
 {-496 377, 642 979, -321 985, 83 995, -12 563, 1089, -51, 1},
 {-505 449, 646 291, -322 385, 84 011, -12 563, 1089, -51, 1},
 {-457 569, 624 051, -318 561, 83 723, -12 555, 1089, -51, 1},
 {-466 641, 627 363, -318 961, 83 739, -12 555, 1089, -51, 1}}
```

```
A = {{-580 545, 687 539, -330 721, 84 747, -12 587, 1089, -51, 1},
    {-578 529, 687 027, -330 689, 84 747, -12 587, 1089, -51, 1},
    {-541 737, 668 611, -327 297, 84 475, -12 579, 1089, -51, 1},
    {-552 825, 672 435, -327 729, 84 491, -12 579, 1089, -51, 1},
    {-550 809, 671 923, -327 697, 84 491, -12 579, 1089, -51, 1},
    {-548 793, 671 411, -327 665, 84 491, -12 579, 1089, -51, 1},
    {-559 305, 675 171, -328 097, 84 507, -12 579, 1089, -51, 1},
    {-557 289, 674 659, -328 065, 84 507, -12 579, 1089, -51, 1},
    {-557 865, 674 723, -328 065, 84 507, -12 579, 1089, -51, 1},
    {-514 017, 653 507, -324 305, 84 219, -12 571, 1089, -51, 1},
    {-512 001, 652 995, -324 273, 84 219, -12 571, 1089, -51, 1},
    {-521 073, 656 307, -324 673, 84 235, -12 571, 1089, -51, 1},
    {-519 057, 655 795, -324 641, 84 235, -12 571, 1089, -51, 1},
    {-530 145, 659 619, -325 073, 84 251, -12 571, 1089, -51, 1},
    {-528 129, 659 107, -325 041, 84 251, -12 571, 1089, -51, 1},
    {-537 201, 662 419, -325 441, 84 267, -12 571, 1089, -51, 1},
    {-534 609, 661 843, -325 409, 84 267, -12 571, 1089, -51, 1},
    {-482 265, 637 379, -321 249, 83 963, -12 563, 1089, -51, 1},
    {-489 321, 640 179, -321 617, 83 979, -12 563, 1089, -51, 1},
    {-498 393, 643 491, -322 017, 83 995, -12 563, 1089, -51, 1},
    {-496 377, 642 979, -321 985, 83 995, -12 563, 1089, -51, 1},
    {-505 449, 646 291, -322 385, 84 011, -12 563, 1089, -51, 1},
    {-457 569, 624 051, -318 561, 83 723, -12 555, 1089, -51, 1},
    {-466 641, 627 363, -318 961, 83 739, -12 555, 1089, -51, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix}
-580\,545 & 687\,539 & -330\,721 & 84\,747 & -12\,587 & 1089 & -51 & 1 \\
-578\,529 & 687\,027 & -330\,689 & 84\,747 & -12\,587 & 1089 & -51 & 1 \\
-541\,737 & 668\,611 & -327\,297 & 84\,475 & -12\,579 & 1089 & -51 & 1 \\
-552\,825 & 672\,435 & -327\,729 & 84\,491 & -12\,579 & 1089 & -51 & 1 \\
-550\,809 & 671\,923 & -327\,697 & 84\,491 & -12\,579 & 1089 & -51 & 1 \\
-548\,793 & 671\,411 & -327\,665 & 84\,491 & -12\,579 & 1089 & -51 & 1 \\
-559\,305 & 675\,171 & -328\,097 & 84\,507 & -12\,579 & 1089 & -51 & 1 \\
-557\,289 & 674\,659 & -328\,065 & 84\,507 & -12\,579 & 1089 & -51 & 1 \\
-557\,865 & 674\,723 & -328\,065 & 84\,507 & -12\,579 & 1089 & -51 & 1 \\
-514\,017 & 653\,507 & -324\,305 & 84\,219 & -12\,571 & 1089 & -51 & 1 \\
-512\,001 & 652\,995 & -324\,273 & 84\,219 & -12\,571 & 1089 & -51 & 1 \\
-521\,073 & 656\,307 & -324\,673 & 84\,235 & -12\,571 & 1089 & -51 & 1 \\
-519\,057 & 655\,795 & -324\,641 & 84\,235 & -12\,571 & 1089 & -51 & 1 \\
-530\,145 & 659\,619 & -325\,073 & 84\,251 & -12\,571 & 1089 & -51 & 1 \\
-528\,129 & 659\,107 & -325\,041 & 84\,251 & -12\,571 & 1089 & -51 & 1 \\
-537\,201 & 662\,419 & -325\,441 & 84\,267 & -12\,571 & 1089 & -51 & 1 \\
-534\,609 & 661\,843 & -325\,409 & 84\,267 & -12\,571 & 1089 & -51 & 1 \\
-482\,265 & 637\,379 & -321\,249 & 83\,963 & -12\,563 & 1089 & -51 & 1 \\
-489\,321 & 640\,179 & -321\,617 & 83\,979 & -12\,563 & 1089 & -51 & 1 \\
-498\,393 & 643\,491 & -322\,017 & 83\,995 & -12\,563 & 1089 & -51 & 1 \\
-496\,377 & 642\,979 & -321\,985 & 83\,995 & -12\,563 & 1089 & -51 & 1 \\
-505\,449 & 646\,291 & -322\,385 & 84\,011 & -12\,563 & 1089 & -51 & 1 \\
-457\,569 & 624\,051 & -318\,561 & 83\,723 & -12\,555 & 1089 & -51 & 1 \\
-466\,641 & 627\,363 & -318\,961 & 83\,739 & -12\,555 & 1089 & -51 & 1
\end{pmatrix}$$

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

```
{-23 396 345, 27 945 611, -13 505 961, 3 469 539, -515 891, 44 649, -2091, 41}
```

```
Array[c, 8].Transpose[A]
```

```
{-580 545 c[1] + 687 539 c[2] - 330 721 c[3] + 84 747 c[4] -
   12 587 c[5] + 1089 c[6] - 51 c[7] + c[8], -578 529 c[1] + 687 027 c[2] -
   330 689 c[3] + 84 747 c[4] - 12 587 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -541 737 c[1] + 668 611 c[2] - 327 297 c[3] + 84 475 c[4] - 12 579 c[5] +
   1089 c[6] - 51 c[7] + c[8], -552 825 c[1] + 672 435 c[2] -
   327 729 c[3] + 84 491 c[4] - 12 579 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -550 809 c[1] + 671 923 c[2] - 327 697 c[3] + 84 491 c[4] - 12 579 c[5] +
   1089 c[6] - 51 c[7] + c[8], -548 793 c[1] + 671 411 c[2] -
   327 665 c[3] + 84 491 c[4] - 12 579 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -559 305 c[1] + 675 171 c[2] - 328 097 c[3] + 84 507 c[4] - 12 579 c[5] +
   1089 c[6] - 51 c[7] + c[8], -557 289 c[1] + 674 659 c[2] -
   328 065 c[3] + 84 507 c[4] - 12 579 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -557 865 c[1] + 674 723 c[2] - 328 065 c[3] + 84 507 c[4] - 12 579 c[5] +
   1089 c[6] - 51 c[7] + c[8], -514 017 c[1] + 653 507 c[2] -
   324 305 c[3] + 84 219 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -512 001 c[1] + 652 995 c[2] - 324 273 c[3] + 84 219 c[4] - 12 571 c[5] +
   1089 c[6] - 51 c[7] + c[8], -521 073 c[1] + 656 307 c[2] -
   324 673 c[3] + 84 235 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -519 057 c[1] + 655 795 c[2] - 324 641 c[3] + 84 235 c[4] - 12 571 c[5] +
   1089 c[6] - 51 c[7] + c[8], -530 145 c[1] + 659 619 c[2] -
   325 073 c[3] + 84 251 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -528 129 c[1] + 659 107 c[2] - 325 041 c[3] + 84 251 c[4] - 12 571 c[5] +
   1089 c[6] - 51 c[7] + c[8], -537 201 c[1] + 662 419 c[2] -
   325 441 c[3] + 84 267 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -534 609 c[1] + 661 843 c[2] - 325 409 c[3] + 84 267 c[4] - 12 571 c[5] +
   1089 c[6] - 51 c[7] + c[8], -482 265 c[1] + 637 379 c[2] -
   321 249 c[3] + 83 963 c[4] - 12 563 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -489 321 c[1] + 640 179 c[2] - 321 617 c[3] + 83 979 c[4] - 12 563 c[5] +
   1089 c[6] - 51 c[7] + c[8], -498 393 c[1] + 643 491 c[2] -
   322 017 c[3] + 83 995 c[4] - 12 563 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -496 377 c[1] + 642 979 c[2] - 321 985 c[3] + 83 995 c[4] - 12 563 c[5] +
   1089 c[6] - 51 c[7] + c[8], -505 449 c[1] + 646 291 c[2] -
   322 385 c[3] + 84 011 c[4] - 12 563 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -457 569 c[1] + 624 051 c[2] - 318 561 c[3] + 83 723 c[4] - 12 555 c[5] +
   1089 c[6] - 51 c[7] + c[8], -466 641 c[1] + 627 363 c[2] -
   318 961 c[3] + 83 739 c[4] - 12 555 c[5] + 1089 c[6] - 51 c[7] + c[8]}
```

```
Array[c, 8].g
```

```
-23 396 345 c[1] + 27 945 611 c[2] - 13 505 961 c[3] +
 3 469 539 c[4] - 515 891 c[5] + 44 649 c[6] - 2091 c[7] + 41 c[8]
```

```
cert = Flatten[
  Array[c, 8] /. FindInstance[-23 396 345 c[1] + 27 945 611 c[2] - 13 505 961 c[3] +
       3 469 539 c[4] - 515 891 c[5] + 44 649 c[6] - 2091 c[7] + 41 c[8] < 0 &&
     -580 545 c[1] + 687 539 c[2] - 330 721 c[3] + 84 747 c[4] - 12 587 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -578 529 c[1] + 687 027 c[2] -
       330 689 c[3] + 84 747 c[4] - 12 587 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -541 737 c[1] + 668 611 c[2] - 327 297 c[3] + 84 475 c[4] - 12 579 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -552 825 c[1] + 672 435 c[2] -
       327 729 c[3] + 84 491 c[4] - 12 579 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -550 809 c[1] + 671 923 c[2] - 327 697 c[3] + 84 491 c[4] - 12 579 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -548 793 c[1] + 671 411 c[2] -
       327 665 c[3] + 84 491 c[4] - 12 579 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -559 305 c[1] + 675 171 c[2] - 328 097 c[3] + 84 507 c[4] -
       12 579 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -557 289 c[1] + 674 659 c[2] - 328 065 c[3] + 84 507 c[4] - 12 579 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -557 865 c[1] + 674 723 c[2] -
       328 065 c[3] + 84 507 c[4] - 12 579 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -514 017 c[1] + 653 507 c[2] - 324 305 c[3] + 84 219 c[4] - 12 571 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -512 001 c[1] + 652 995 c[2] -
       324 273 c[3] + 84 219 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -521 073 c[1] + 656 307 c[2] - 324 673 c[3] + 84 235 c[4] - 12 571 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -519 057 c[1] + 655 795 c[2] -
       324 641 c[3] + 84 235 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -530 145 c[1] + 659 619 c[2] - 325 073 c[3] + 84 251 c[4] - 12 571 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -528 129 c[1] + 659 107 c[2] -
       325 041 c[3] + 84 251 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -537 201 c[1] + 662 419 c[2] - 325 441 c[3] + 84 267 c[4] - 12 571 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -534 609 c[1] + 661 843 c[2] -
       325 409 c[3] + 84 267 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -482 265 c[1] + 637 379 c[2] - 321 249 c[3] + 83 963 c[4] - 12 563 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -489 321 c[1] + 640 179 c[2] -
       321 617 c[3] + 83 979 c[4] - 12 563 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -498 393 c[1] + 643 491 c[2] - 322 017 c[3] + 83 995 c[4] - 12 563 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -496 377 c[1] + 642 979 c[2] -
       321 985 c[3] + 83 995 c[4] - 12 563 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -505 449 c[1] + 646 291 c[2] - 322 385 c[3] + 84 011 c[4] - 12 563 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -457 569 c[1] + 624 051 c[2] -
       318 561 c[3] + 83 723 c[4] - 12 555 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -466 641 c[1] + 627 363 c[2] - 318 961 c[3] + 83 739 c[4] - 12 555 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0, Array[c, 8], Integers]]
```

```
{11 780, 28 348, 38 250, 0, 0, 0, 0, 0}
```

```
GCD[11 780, 28 348, 38 250, 0, 0, 0, 0, 0]
```

```
2
```

```
cert = cert / 2
```

```
{5890, 14 174, 19 125, 0, 0, 0, 0, 0}
```

```
Reverse[cert]
```

```
{0, 0, 0, 0, 0, 19 125, 14 174, 5890}
```

```
cert.g
```

```
-4 885 861
```

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

```
{728 611, 5 957 763, 26 506 259, 7 137 315, 12 366 467, 17 595 619,
 712 179, 5 941 331, 3 455 827, 32 914 963, 38 144 115, 24 004 323,
 29 233 475, 9 864 531, 15 093 683, 953 891, 8 668 547, 49 781 971,
 40 871 331, 26 731 539, 31 960 691, 17 820 899, 57 738 339, 43 598 547}
```

```
chi = (-9 + x)^4 (-7 + x)^7 (5 + x)^25 (-25 580 + 17 757 x - 4780 x^2 + 626 x^3 - 40 x^4 + x^5)
```

$$(-9+x)^4\,(-7+x)^7\,(5+x)^{25}\,\left(-25\,580+17\,757\,x-4780\,x^2+626\,x^3-40\,x^4+x^5\right)$$

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

```
{{-587 601, 690 339, -331 089, 84 763, -12 587, 1089, -51, 1},
 {-548 793, 671 411, -327 665, 84 491, -12 579, 1089, -51, 1},
 {-559 881, 675 235, -328 097, 84 507, -12 579, 1089, -51, 1},
 {-557 865, 674 723, -328 065, 84 507, -12 579, 1089, -51, 1},
 {-566 937, 678 035, -328 465, 84 523, -12 579, 1089, -51, 1},
 {-521 073, 656 307, -324 673, 84 235, -12 571, 1089, -51, 1},
 {-519 057, 655 795, -324 641, 84 235, -12 571, 1089, -51, 1},
 {-530 145, 659 619, -325 073, 84 251, -12 571, 1089, -51, 1},
 {-528 129, 659 107, -325 041, 84 251, -12 571, 1089, -51, 1},
 {-526 113, 658 595, -325 009, 84 251, -12 571, 1089, -51, 1},
 {-539 217, 662 931, -325 473, 84 267, -12 571, 1089, -51, 1},
 {-537 201, 662 419, -325 441, 84 267, -12 571, 1089, -51, 1},
 {-546 273, 665 731, -325 841, 84 283, -12 571, 1089, -51, 1},
 {-482 265, 637 379, -321 249, 83 963, -12 563, 1089, -51, 1},
 {-480 249, 636 867, -321 217, 83 963, -12 563, 1089, -51, 1},
 {-489 321, 640 179, -321 617, 83 979, -12 563, 1089, -51, 1},
 {-487 305, 639 667, -321 585, 83 979, -12 563, 1089, -51, 1},
 {-498 393, 643 491, -322 017, 83 995, -12 563, 1089, -51, 1},
 {-496 377, 642 979, -321 985, 83 995, -12 563, 1089, -51, 1},
 {-505 449, 646 291, -322 385, 84 011, -12 563, 1089, -51, 1},
 {-457 569, 624 051, -318 561, 83 723, -12 555, 1089, -51, 1},
 {-455 553, 623 539, -318 529, 83 723, -12 555, 1089, -51, 1},
 {-464 625, 626 851, -318 929, 83 739, -12 555, 1089, -51, 1},
 {-425 817, 607 923, -315 505, 83 467, -12 547, 1089, -51, 1}}
```

```
A = {{-587 601, 690 339, -331 089, 84 763, -12 587, 1089, -51, 1},
    {-548 793, 671 411, -327 665, 84 491, -12 579, 1089, -51, 1},
    {-559 881, 675 235, -328 097, 84 507, -12 579, 1089, -51, 1},
    {-557 865, 674 723, -328 065, 84 507, -12 579, 1089, -51, 1},
    {-566 937, 678 035, -328 465, 84 523, -12 579, 1089, -51, 1},
    {-521 073, 656 307, -324 673, 84 235, -12 571, 1089, -51, 1},
    {-519 057, 655 795, -324 641, 84 235, -12 571, 1089, -51, 1},
    {-530 145, 659 619, -325 073, 84 251, -12 571, 1089, -51, 1},
    {-528 129, 659 107, -325 041, 84 251, -12 571, 1089, -51, 1},
    {-526 113, 658 595, -325 009, 84 251, -12 571, 1089, -51, 1},
    {-539 217, 662 931, -325 473, 84 267, -12 571, 1089, -51, 1},
    {-537 201, 662 419, -325 441, 84 267, -12 571, 1089, -51, 1},
    {-546 273, 665 731, -325 841, 84 283, -12 571, 1089, -51, 1},
    {-482 265, 637 379, -321 249, 83 963, -12 563, 1089, -51, 1},
    {-480 249, 636 867, -321 217, 83 963, -12 563, 1089, -51, 1},
    {-489 321, 640 179, -321 617, 83 979, -12 563, 1089, -51, 1},
    {-487 305, 639 667, -321 585, 83 979, -12 563, 1089, -51, 1},
    {-498 393, 643 491, -322 017, 83 995, -12 563, 1089, -51, 1},
    {-496 377, 642 979, -321 985, 83 995, -12 563, 1089, -51, 1},
    {-505 449, 646 291, -322 385, 84 011, -12 563, 1089, -51, 1},
    {-457 569, 624 051, -318 561, 83 723, -12 555, 1089, -51, 1},
    {-455 553, 623 539, -318 529, 83 723, -12 555, 1089, -51, 1},
    {-464 625, 626 851, -318 929, 83 739, -12 555, 1089, -51, 1},
    {-425 817, 607 923, -315 505, 83 467, -12 547, 1089, -51, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix}
-587\,601 & 690\,339 & -331\,089 & 84\,763 & -12\,587 & 1089 & -51 & 1 \\
-548\,793 & 671\,411 & -327\,665 & 84\,491 & -12\,579 & 1089 & -51 & 1 \\
-559\,881 & 675\,235 & -328\,097 & 84\,507 & -12\,579 & 1089 & -51 & 1 \\
-557\,865 & 674\,723 & -328\,065 & 84\,507 & -12\,579 & 1089 & -51 & 1 \\
-566\,937 & 678\,035 & -328\,465 & 84\,523 & -12\,579 & 1089 & -51 & 1 \\
-521\,073 & 656\,307 & -324\,673 & 84\,235 & -12\,571 & 1089 & -51 & 1 \\
-519\,057 & 655\,795 & -324\,641 & 84\,235 & -12\,571 & 1089 & -51 & 1 \\
-530\,145 & 659\,619 & -325\,073 & 84\,251 & -12\,571 & 1089 & -51 & 1 \\
-528\,129 & 659\,107 & -325\,041 & 84\,251 & -12\,571 & 1089 & -51 & 1 \\
-526\,113 & 658\,595 & -325\,009 & 84\,251 & -12\,571 & 1089 & -51 & 1 \\
-539\,217 & 662\,931 & -325\,473 & 84\,267 & -12\,571 & 1089 & -51 & 1 \\
-537\,201 & 662\,419 & -325\,441 & 84\,267 & -12\,571 & 1089 & -51 & 1 \\
-546\,273 & 665\,731 & -325\,841 & 84\,283 & -12\,571 & 1089 & -51 & 1 \\
-482\,265 & 637\,379 & -321\,249 & 83\,963 & -12\,563 & 1089 & -51 & 1 \\
-480\,249 & 636\,867 & -321\,217 & 83\,963 & -12\,563 & 1089 & -51 & 1 \\
-489\,321 & 640\,179 & -321\,617 & 83\,979 & -12\,563 & 1089 & -51 & 1 \\
-487\,305 & 639\,667 & -321\,585 & 83\,979 & -12\,563 & 1089 & -51 & 1 \\
-498\,393 & 643\,491 & -322\,017 & 83\,995 & -12\,563 & 1089 & -51 & 1 \\
-496\,377 & 642\,979 & -321\,985 & 83\,995 & -12\,563 & 1089 & -51 & 1 \\
-505\,449 & 646\,291 & -322\,385 & 84\,011 & -12\,563 & 1089 & -51 & 1 \\
-457\,569 & 624\,051 & -318\,561 & 83\,723 & -12\,555 & 1089 & -51 & 1 \\
-455\,553 & 623\,539 & -318\,529 & 83\,723 & -12\,555 & 1089 & -51 & 1 \\
-464\,625 & 626\,851 & -318\,929 & 83\,739 & -12\,555 & 1089 & -51 & 1 \\
-425\,817 & 607\,923 & -315\,505 & 83\,467 & -12\,547 & 1089 & -51 & 1
\end{pmatrix}$$

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

```
{-23 056 145, 27 727 451, -13 457 769, 3 465 043, -515 739, 44 649, -2091, 41}
```

```
Array[c, 8].Transpose[A]
```

```
{-587 601 c[1] + 690 339 c[2] - 331 089 c[3] + 84 763 c[4] -
   12 587 c[5] + 1089 c[6] - 51 c[7] + c[8], -548 793 c[1] + 671 411 c[2] -
   327 665 c[3] + 84 491 c[4] - 12 579 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -559 881 c[1] + 675 235 c[2] - 328 097 c[3] + 84 507 c[4] - 12 579 c[5] +
   1089 c[6] - 51 c[7] + c[8], -557 865 c[1] + 674 723 c[2] -
   328 065 c[3] + 84 507 c[4] - 12 579 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -566 937 c[1] + 678 035 c[2] - 328 465 c[3] + 84 523 c[4] - 12 579 c[5] +
   1089 c[6] - 51 c[7] + c[8], -521 073 c[1] + 656 307 c[2] -
   324 673 c[3] + 84 235 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -519 057 c[1] + 655 795 c[2] - 324 641 c[3] + 84 235 c[4] - 12 571 c[5] +
   1089 c[6] - 51 c[7] + c[8], -530 145 c[1] + 659 619 c[2] -
   325 073 c[3] + 84 251 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -528 129 c[1] + 659 107 c[2] - 325 041 c[3] + 84 251 c[4] - 12 571 c[5] +
   1089 c[6] - 51 c[7] + c[8], -526 113 c[1] + 658 595 c[2] -
   325 009 c[3] + 84 251 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -539 217 c[1] + 662 931 c[2] - 325 473 c[3] + 84 267 c[4] - 12 571 c[5] +
   1089 c[6] - 51 c[7] + c[8], -537 201 c[1] + 662 419 c[2] -
   325 441 c[3] + 84 267 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -546 273 c[1] + 665 731 c[2] - 325 841 c[3] + 84 283 c[4] - 12 571 c[5] +
   1089 c[6] - 51 c[7] + c[8], -482 265 c[1] + 637 379 c[2] -
   321 249 c[3] + 83 963 c[4] - 12 563 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -480 249 c[1] + 636 867 c[2] - 321 217 c[3] + 83 963 c[4] - 12 563 c[5] +
   1089 c[6] - 51 c[7] + c[8], -489 321 c[1] + 640 179 c[2] -
   321 617 c[3] + 83 979 c[4] - 12 563 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -487 305 c[1] + 639 667 c[2] - 321 585 c[3] + 83 979 c[4] - 12 563 c[5] +
   1089 c[6] - 51 c[7] + c[8], -498 393 c[1] + 643 491 c[2] -
   322 017 c[3] + 83 995 c[4] - 12 563 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -496 377 c[1] + 642 979 c[2] - 321 985 c[3] + 83 995 c[4] - 12 563 c[5] +
   1089 c[6] - 51 c[7] + c[8], -505 449 c[1] + 646 291 c[2] -
   322 385 c[3] + 84 011 c[4] - 12 563 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -457 569 c[1] + 624 051 c[2] - 318 561 c[3] + 83 723 c[4] - 12 555 c[5] +
   1089 c[6] - 51 c[7] + c[8], -455 553 c[1] + 623 539 c[2] -
   318 529 c[3] + 83 723 c[4] - 12 555 c[5] + 1089 c[6] - 51 c[7] + c[8],
 -464 625 c[1] + 626 851 c[2] - 318 929 c[3] + 83 739 c[4] - 12 555 c[5] +
   1089 c[6] - 51 c[7] + c[8], -425 817 c[1] + 607 923 c[2] -
   315 505 c[3] + 83 467 c[4] - 12 547 c[5] + 1089 c[6] - 51 c[7] + c[8]}
```

```
Array[c, 8].g
```

```
-23 056 145 c[1] + 27 727 451 c[2] - 13 457 769 c[3] +
 3 465 043 c[4] - 515 739 c[5] + 44 649 c[6] - 2091 c[7] + 41 c[8]
```

```
cert = Flatten[
  Array[c, 8] /. FindInstance[-23 056 145 c[1] + 27 727 451 c[2] - 13 457 769 c[3] +
       3 465 043 c[4] - 515 739 c[5] + 44 649 c[6] - 2091 c[7] + 41 c[8] < 0 &&
     -587 601 c[1] + 690 339 c[2] - 331 089 c[3] + 84 763 c[4] - 12 587 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -548 793 c[1] + 671 411 c[2] -
       327 665 c[3] + 84 491 c[4] - 12 579 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -559 881 c[1] + 675 235 c[2] - 328 097 c[3] + 84 507 c[4] - 12 579 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -557 865 c[1] + 674 723 c[2] -
       328 065 c[3] + 84 507 c[4] - 12 579 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -566 937 c[1] + 678 035 c[2] - 328 465 c[3] + 84 523 c[4] - 12 579 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -521 073 c[1] + 656 307 c[2] -
       324 673 c[3] + 84 235 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -519 057 c[1] + 655 795 c[2] - 324 641 c[3] + 84 235 c[4] -
       12 571 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -530 145 c[1] + 659 619 c[2] - 325 073 c[3] + 84 251 c[4] - 12 571 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -528 129 c[1] + 659 107 c[2] -
       325 041 c[3] + 84 251 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -526 113 c[1] + 658 595 c[2] - 325 009 c[3] + 84 251 c[4] - 12 571 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -539 217 c[1] + 662 931 c[2] -
       325 473 c[3] + 84 267 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -537 201 c[1] + 662 419 c[2] - 325 441 c[3] + 84 267 c[4] - 12 571 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -546 273 c[1] + 665 731 c[2] -
       325 841 c[3] + 84 283 c[4] - 12 571 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -482 265 c[1] + 637 379 c[2] - 321 249 c[3] + 83 963 c[4] - 12 563 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -480 249 c[1] + 636 867 c[2] -
       321 217 c[3] + 83 963 c[4] - 12 563 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -489 321 c[1] + 640 179 c[2] - 321 617 c[3] + 83 979 c[4] - 12 563 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -487 305 c[1] + 639 667 c[2] -
       321 585 c[3] + 83 979 c[4] - 12 563 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -498 393 c[1] + 643 491 c[2] - 322 017 c[3] + 83 995 c[4] - 12 563 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -496 377 c[1] + 642 979 c[2] -
       321 985 c[3] + 83 995 c[4] - 12 563 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -505 449 c[1] + 646 291 c[2] - 322 385 c[3] + 84 011 c[4] - 12 563 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -457 569 c[1] + 624 051 c[2] -
       318 561 c[3] + 83 723 c[4] - 12 555 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -455 553 c[1] + 623 539 c[2] - 318 529 c[3] + 83 723 c[4] - 12 555 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0 && -464 625 c[1] + 626 851 c[2] -
       318 929 c[3] + 83 739 c[4] - 12 555 c[5] + 1089 c[6] - 51 c[7] + c[8] ≥ 0 &&
     -425 817 c[1] + 607 923 c[2] - 315 505 c[3] + 83 467 c[4] - 12 547 c[5] +
       1089 c[6] - 51 c[7] + c[8] ≥ 0, Array[c, 8], Integers]]
```

```
{0, 152 389, 2 438 199, 29 410 745, 316 965 325, 0, 0, 2 198 761 371 082}
```

```
GCD[0, 152 389, 2 438 199, 29 410 745, 316 965 325, 0, 0, 2 198 761 371 082]
```

```
1
```

```
Reverse[cert]
```

```
{2 198 761 371 082, 0, 0, 316 965 325, 29 410 745, 2 438 199, 152 389, 0}
```

```
cert.g
```

```
-27 836 370
```

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

```
{1 004 902, 979 246, 984 734, 983 934, 988 622, 959 078, 958 278, 963 766,
 962 966, 962 166, 968 454, 967 654, 972 342, 933 422, 932 622, 937 310,
 936 510, 941 998, 941 198, 945 886, 915 542, 914 742, 919 430, 893 774}
```

```
chi = (-9 + x)^4 (-7 + x)^6 (5 + x)^25 (59 - 16 x + x^2)^2 (52 - 15 x + x^2)
```

```
(-9 + x)^4 (-7 + x)^6 (5 + x)^25 (59 - 16 x + x^2)^2 (52 - 15 x + x^2)
```

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

```
{{67 437, -71 978, 29 863, -6284, 715, -42, 1},
 {63 189, -70 354, 29 663, -6276, 715, -42, 1}}
```

```
A = {{67 437, -71 978, 29 863, -6284, 715, -42, 1},
    {63 189, -70 354, 29 663, -6276, 715, -42, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} 67\,437 & -71\,978 & 29\,863 & -6284 & 715 & -42 & 1 \\ 63\,189 & -70\,354 & 29\,663 & -6276 & 715 & -42 & 1 \end{pmatrix}$$

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

```
{2 771 285, -2 952 858, 1 224 511, -257 644, 29 315, -1722, 41}
```

```
Array[c, 7].Transpose[A]
```

```
{67 437 c[1] - 71 978 c[2] + 29 863 c[3] - 6284 c[4] + 715 c[5] - 42 c[6] + c[7],
 63 189 c[1] - 70 354 c[2] + 29 663 c[3] - 6276 c[4] + 715 c[5] - 42 c[6] + c[7]}
```

```
Array[c, 7].g
```

```
2 771 285 c[1] - 2 952 858 c[2] + 1 224 511 c[3] -
 257 644 c[4] + 29 315 c[5] - 1722 c[6] + 41 c[7]
```

```
cert =
 Flatten[Array[c, 7] /. FindInstance[2 771 285 c[1] - 2 952 858 c[2] + 1 224 511 c[3] -
       257 644 c[4] + 29 315 c[5] - 1722 c[6] + 41 c[7] < 0 &&
     67 437 c[1] - 71 978 c[2] + 29 863 c[3] - 6284 c[4] + 715 c[5] - 42 c[6] + c[7] ≥ 0 &&
     63 189 c[1] - 70 354 c[2] + 29 663 c[3] - 6276 c[4] + 715 c[5] - 42 c[6] + c[7] ≥ 0,
    Array[c, 7], Integers]]
```

```
{0, 3, -56 453, -889 825, 0, 0, -3 905 464 984}
```

```
GCD[0, 3, -56 453, -889 825, 0, 0, -3 905 464 984]
```

```
1
```

```
Reverse[cert]
```

```
{-3 905 464 984, 0, 0, -889 825, -56 453, 3, 0}
```

```
cert.g
```

```
-2 170 101
```

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

```
{123 443, 4 300 315}
```

```
chi = (-9 + x)^5 (-8 + x) (-7 + x)^7 (5 + x)^25 (-349 + 163 x - 23 x^2 + x^3)
```

```
(-9 + x)^5 (-8 + x) (-7 + x)^7 (5 + x)^25 (-349 + 163 x - 23 x^2 + x^3)
```

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

```
{{65 961, -69 546, 29 071, -6188, 711, -42, 1},
 {61 649, -67 922, 28 871, -6180, 711, -42, 1},
 {62 433, -68 146, 28 887, -6180, 711, -42, 1},
 {63 441, -68 402, 28 903, -6180, 711, -42, 1},
 {57 113, -66 266, 28 671, -6172, 711, -42, 1},
 {58 905, -66 746, 28 703, -6172, 711, -42, 1},
 {53 585, -64 866, 28 487, -6164, 711, -42, 1},
 {55 377, -65 346, 28 519, -6164, 711, -42, 1},
 {50 841, -63 690, 28 319, -6156, 711, -42, 1},
 {45 521, -61 810, 28 103, -6148, 711, -42, 1},
 {47 313, -62 290, 28 135, -6148, 711, -42, 1},
 {39 249, -59 234, 27 751, -6132, 711, -42, 1}}
```

```
A = {{65 961, -69 546, 29 071, -6188, 711, -42, 1},
    {61 649, -67 922, 28 871, -6180, 711, -42, 1},
    {62 433, -68 146, 28 887, -6180, 711, -42, 1}, {63 441, -68 402, 28 903,
     -6180, 711, -42, 1}, {57 113, -66 266, 28 671, -6172, 711, -42, 1},
    {58 905, -66 746, 28 703, -6172, 711, -42, 1}, {53 585, -64 866, 28 487,
     -6164, 711, -42, 1}, {55 377, -65 346, 28 519, -6164, 711, -42, 1},
    {50 841, -63 690, 28 319, -6156, 711, -42, 1}, {45 521, -61 810, 28 103,
     -6148, 711, -42, 1}, {47 313, -62 290, 28 135, -6148, 711, -42, 1},
    {39 249, -59 234, 27 751, -6132, 711, -42, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} 65\,961 & -69\,546 & 29\,071 & -6188 & 711 & -42 & 1 \\ 61\,649 & -67\,922 & 28\,871 & -6180 & 711 & -42 & 1 \\ 62\,433 & -68\,146 & 28\,887 & -6180 & 711 & -42 & 1 \\ 63\,441 & -68\,402 & 28\,903 & -6180 & 711 & -42 & 1 \\ 57\,113 & -66\,266 & 28\,671 & -6172 & 711 & -42 & 1 \\ 58\,905 & -66\,746 & 28\,703 & -6172 & 711 & -42 & 1 \\ 53\,585 & -64\,866 & 28\,487 & -6164 & 711 & -42 & 1 \\ 55\,377 & -65\,346 & 28\,519 & -6164 & 711 & -42 & 1 \\ 50\,841 & -63\,690 & 28\,319 & -6156 & 711 & -42 & 1 \\ 45\,521 & -61\,810 & 28\,103 & -6148 & 711 & -42 & 1 \\ 47\,313 & -62\,290 & 28\,135 & -6148 & 711 & -42 & 1 \\ 39\,249 & -59\,234 & 27\,751 & -6132 & 711 & -42 & 1 \end{pmatrix}$$

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

```
{2 508 625, -2 769 690, 1 180 903, -253 228, 29 151, -1722, 41}
```

```
Array[c, 7].Transpose[A]
```

```
{65 961 c[1] - 69 546 c[2] + 29 071 c[3] - 6188 c[4] + 711 c[5] - 42 c[6] + c[7],
 61 649 c[1] - 67 922 c[2] + 28 871 c[3] - 6180 c[4] + 711 c[5] - 42 c[6] + c[7],
 62 433 c[1] - 68 146 c[2] + 28 887 c[3] - 6180 c[4] + 711 c[5] - 42 c[6] + c[7],
 63 441 c[1] - 68 402 c[2] + 28 903 c[3] - 6180 c[4] + 711 c[5] - 42 c[6] + c[7],
 57 113 c[1] - 66 266 c[2] + 28 671 c[3] - 6172 c[4] + 711 c[5] - 42 c[6] + c[7],
 58 905 c[1] - 66 746 c[2] + 28 703 c[3] - 6172 c[4] + 711 c[5] - 42 c[6] + c[7],
 53 585 c[1] - 64 866 c[2] + 28 487 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7],
 55 377 c[1] - 65 346 c[2] + 28 519 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7],
 50 841 c[1] - 63 690 c[2] + 28 319 c[3] - 6156 c[4] + 711 c[5] - 42 c[6] + c[7],
 45 521 c[1] - 61 810 c[2] + 28 103 c[3] - 6148 c[4] + 711 c[5] - 42 c[6] + c[7],
 47 313 c[1] - 62 290 c[2] + 28 135 c[3] - 6148 c[4] + 711 c[5] - 42 c[6] + c[7],
 39 249 c[1] - 59 234 c[2] + 27 751 c[3] - 6132 c[4] + 711 c[5] - 42 c[6] + c[7]}
```

```
Array[c, 7].g
```

```
2 508 625 c[1] - 2 769 690 c[2] + 1 180 903 c[3] -
 253 228 c[4] + 29 151 c[5] - 1722 c[6] + 41 c[7]
```

```
cert =
 Flatten[Array[c, 7] /. FindInstance[2 508 625 c[1] - 2 769 690 c[2] + 1 180 903 c[3] -
       253 228 c[4] + 29 151 c[5] - 1722 c[6] + 41 c[7] < 0 &&
     65 961 c[1] - 69 546 c[2] + 29 071 c[3] - 6188 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     61 649 c[1] - 67 922 c[2] + 28 871 c[3] - 6180 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     62 433 c[1] - 68 146 c[2] + 28 887 c[3] - 6180 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     63 441 c[1] - 68 402 c[2] + 28 903 c[3] - 6180 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     57 113 c[1] - 66 266 c[2] + 28 671 c[3] - 6172 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     58 905 c[1] - 66 746 c[2] + 28 703 c[3] - 6172 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     53 585 c[1] - 64 866 c[2] + 28 487 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     55 377 c[1] - 65 346 c[2] + 28 519 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     50 841 c[1] - 63 690 c[2] + 28 319 c[3] - 6156 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     45 521 c[1] - 61 810 c[2] + 28 103 c[3] - 6148 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     47 313 c[1] - 62 290 c[2] + 28 135 c[3] - 6148 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     39 249 c[1] - 59 234 c[2] + 27 751 c[3] - 6132 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0,
    Array[c, 7], Integers]]
{-8404, -28 265, -48 443, 0, 0, 0, 0}

GCD[-8404, -28 265, -48 443, 0, 0, 0, 0]
1

Reverse[cert]
{0, 0, 0, 0, -48 443, -28 265, -8404}

cert.g
-3 680 679

cert.Transpose[A]
{3 094 993, 3 119 281, 2 086 817, 76 337, 4 121 585,
 1 078 641, 3 113 409, 70 465, 1 072 769, 3 107 537, 64 593, 58 721}

chi = (-11 + x) (-9 + x)^6 (-8 + x) (-7 + x)^6 (-5 + x)^2 (5 + x)^25
(-11 + x) (-9 + x)^6 (-8 + x) (-7 + x)^6 (-5 + x)^2 (5 + x)^25

CoefficientList[feasibleinterlacingpolylist[chi], x]
{{-10 395, 9129, -3010, 470, -35, 1},
 {-9779, 8985, -3002, 470, -35, 1}, {-9923, 9001, -3002, 470, -35, 1},
 {-9891, 9001, -3002, 470, -35, 1}, {-10 035, 9017, -3002, 470, -35, 1},
 {-9275, 8857, -2994, 470, -35, 1}, {-9387, 8873, -2994, 470, -35, 1},
 {-9531, 8889, -2994, 470, -35, 1}, {-8771, 8729, -2986, 470, -35, 1},
 {-8883, 8745, -2986, 470, -35, 1}, {-9027, 8761, -2986, 470, -35, 1},
 {-8379, 8617, -2978, 470, -35, 1}, {-7875, 8489, -2970, 470, -35, 1}}
```

```
A = {{-10395, 9129, -3010, 470, -35, 1},
    {-9779, 8985, -3002, 470, -35, 1}, {-9923, 9001, -3002, 470, -35, 1},
    {-9891, 9001, -3002, 470, -35, 1}, {-10035, 9017, -3002, 470, -35, 1},
    {-9275, 8857, -2994, 470, -35, 1}, {-9387, 8873, -2994, 470, -35, 1},
    {-9531, 8889, -2994, 470, -35, 1}, {-8771, 8729, -2986, 470, -35, 1},
    {-8883, 8745, -2986, 470, -35, 1}, {-9027, 8761, -2986, 470, -35, 1},
    {-8379, 8617, -2978, 470, -35, 1}, {-7875, 8489, -2970, 470, -35, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} -10395 & 9129 & -3010 & 470 & -35 & 1 \\ -9779 & 8985 & -3002 & 470 & -35 & 1 \\ -9923 & 9001 & -3002 & 470 & -35 & 1 \\ -9891 & 9001 & -3002 & 470 & -35 & 1 \\ -10035 & 9017 & -3002 & 470 & -35 & 1 \\ -9275 & 8857 & -2994 & 470 & -35 & 1 \\ -9387 & 8873 & -2994 & 470 & -35 & 1 \\ -9531 & 8889 & -2994 & 470 & -35 & 1 \\ -8771 & 8729 & -2986 & 470 & -35 & 1 \\ -8883 & 8745 & -2986 & 470 & -35 & 1 \\ -9027 & 8761 & -2986 & 470 & -35 & 1 \\ -8379 & 8617 & -2978 & 470 & -35 & 1 \\ -7875 & 8489 & -2970 & 470 & -35 & 1 \end{pmatrix}$$

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

```
{-396435, 366513, -122930, 19270, -1435, 41}
```

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

```
{-10395 c[1] + 9129 c[2] - 3010 c[3] + 470 c[4] - 35 c[5] + c[6],
 -9779 c[1] + 8985 c[2] - 3002 c[3] + 470 c[4] - 35 c[5] + c[6],
 -9923 c[1] + 9001 c[2] - 3002 c[3] + 470 c[4] - 35 c[5] + c[6],
 -9891 c[1] + 9001 c[2] - 3002 c[3] + 470 c[4] - 35 c[5] + c[6],
 -10035 c[1] + 9017 c[2] - 3002 c[3] + 470 c[4] - 35 c[5] + c[6],
 -9275 c[1] + 8857 c[2] - 2994 c[3] + 470 c[4] - 35 c[5] + c[6],
 -9387 c[1] + 8873 c[2] - 2994 c[3] + 470 c[4] - 35 c[5] + c[6],
 -9531 c[1] + 8889 c[2] - 2994 c[3] + 470 c[4] - 35 c[5] + c[6],
 -8771 c[1] + 8729 c[2] - 2986 c[3] + 470 c[4] - 35 c[5] + c[6],
 -8883 c[1] + 8745 c[2] - 2986 c[3] + 470 c[4] - 35 c[5] + c[6],
 -9027 c[1] + 8761 c[2] - 2986 c[3] + 470 c[4] - 35 c[5] + c[6],
 -8379 c[1] + 8617 c[2] - 2978 c[3] + 470 c[4] - 35 c[5] + c[6],
 -7875 c[1] + 8489 c[2] - 2970 c[3] + 470 c[4] - 35 c[5] + c[6]}
```

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

```
-396435 c[1] + 366513 c[2] - 122930 c[3] + 19270 c[4] - 1435 c[5] + 41 c[6]
```

```
cert = Flatten[Array[c, 6] /. FindInstance[
    -396 435 c[1] + 366 513 c[2] - 122 930 c[3] + 19 270 c[4] - 1435 c[5] + 41 c[6] < 0 &&
     -10 395 c[1] + 9129 c[2] - 3010 c[3] + 470 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -9779 c[1] + 8985 c[2] - 3002 c[3] + 470 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -9923 c[1] + 9001 c[2] - 3002 c[3] + 470 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -9891 c[1] + 9001 c[2] - 3002 c[3] + 470 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -10 035 c[1] + 9017 c[2] - 3002 c[3] + 470 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -9275 c[1] + 8857 c[2] - 2994 c[3] + 470 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -9387 c[1] + 8873 c[2] - 2994 c[3] + 470 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -9531 c[1] + 8889 c[2] - 2994 c[3] + 470 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8771 c[1] + 8729 c[2] - 2986 c[3] + 470 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8883 c[1] + 8745 c[2] - 2986 c[3] + 470 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -9027 c[1] + 8761 c[2] - 2986 c[3] + 470 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -8379 c[1] + 8617 c[2] - 2978 c[3] + 470 c[4] - 35 c[5] + c[6] ≥ 0 &&
     -7875 c[1] + 8489 c[2] - 2970 c[3] + 470 c[4] - 35 c[5] + c[6] ≥ 0,
    Array[c, 6], Integers]]
```

```
{10 302, 82 421, 659 363, 0, 0, 1 339 775 890}
```

```
GCD[10 302, 82 421, 659 363, 0, 0, 1 339 775 890]
```

```
1
```

```
Reverse[cert]
```

```
{1 339 775 890, 0, 0, 659 363, 82 421, 10 302}
```

```
cert.g
```

```
-387 497
```

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

```
{425 279, 177 591, 12 839, 342 503, 177 751, 94 815,
 259 727, 94 975, 12 039, 176 951, 12 199, 94 175, 11 399}
```

```
chi = (-9 + x)^5 (-7 + x)^7 (5 + x)^25 (2824 - 1653 x + 347 x^2 - 31 x^3 + x^4)
```

$$(-9+x)^5\,(-7+x)^7\,(5+x)^{25}\left(2824-1653\,x+347\,x^2-31\,x^3+x^4\right)$$

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

```
{{59689, -66970, 28719, -6172, 711, -42, 1},
 {59401, -66938, 28719, -6172, 711, -42, 1},
 {60633, -67226, 28735, -6172, 711, -42, 1},
 {60697, -67226, 28735, -6172, 711, -42, 1},
 {61353, -67450, 28751, -6172, 711, -42, 1},
 {54145, -65058, 28503, -6164, 711, -42, 1},
 {55377, -65346, 28519, -6164, 711, -42, 1},
 {55153, -65314, 28519, -6164, 711, -42, 1},
 {56385, -65602, 28535, -6164, 711, -42, 1},
 {56097, -65570, 28535, -6164, 711, -42, 1},
 {56161, -65570, 28535, -6164, 711, -42, 1},
 {57393, -65858, 28551, -6164, 711, -42, 1},
 {57105, -65826, 28551, -6164, 711, -42, 1},
 {58401, -66114, 28567, -6164, 711, -42, 1},
 {58113, -66082, 28567, -6164, 711, -42, 1},
 {50841, -63690, 28319, -6156, 711, -42, 1},
 {51849, -63946, 28335, -6156, 711, -42, 1},
 {52857, -64202, 28351, -6156, 711, -42, 1},
 {52569, -64170, 28351, -6156, 711, -42, 1},
 {53865, -64458, 28367, -6156, 711, -42, 1},
 {48321, -62546, 28151, -6148, 711, -42, 1},
 {49329, -62802, 28167, -6148, 711, -42, 1},
 {44793, -61146, 27967, -6140, 711, -42, 1}}
```

```
A = {{59689, -66970, 28719, -6172, 711, -42, 1},
   {59401, -66938, 28719, -6172, 711, -42, 1},
   {60633, -67226, 28735, -6172, 711, -42, 1}, {60697, -67226, 28735,
    -6172, 711, -42, 1}, {61353, -67450, 28751, -6172, 711, -42, 1},
   {54145, -65058, 28503, -6164, 711, -42, 1}, {55377, -65346, 28519,
    -6164, 711, -42, 1}, {55153, -65314, 28519, -6164, 711, -42, 1},
   {56385, -65602, 28535, -6164, 711, -42, 1}, {56097, -65570, 28535,
    -6164, 711, -42, 1}, {56161, -65570, 28535, -6164, 711, -42, 1},
   {57393, -65858, 28551, -6164, 711, -42, 1}, {57105, -65826, 28551,
    -6164, 711, -42, 1}, {58401, -66114, 28567, -6164, 711, -42, 1},
   {58113, -66082, 28567, -6164, 711, -42, 1}, {50841, -63690, 28319,
    -6156, 711, -42, 1}, {51849, -63946, 28335, -6156, 711, -42, 1},
   {52857, -64202, 28351, -6156, 711, -42, 1}, {52569, -64170, 28351,
    -6156, 711, -42, 1}, {53865, -64458, 28367, -6156, 711, -42, 1},
   {48321, -62546, 28151, -6148, 711, -42, 1}, {49329, -62802, 28167,
    -6148, 711, -42, 1}, {44793, -61146, 27967, -6140, 711, -42, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix}
59\,689 & -66\,970 & 28\,719 & -6172 & 711 & -42 & 1 \\
59\,401 & -66\,938 & 28\,719 & -6172 & 711 & -42 & 1 \\
60\,633 & -67\,226 & 28\,735 & -6172 & 711 & -42 & 1 \\
60\,697 & -67\,226 & 28\,735 & -6172 & 711 & -42 & 1 \\
61\,353 & -67\,450 & 28\,751 & -6172 & 711 & -42 & 1 \\
54\,145 & -65\,058 & 28\,503 & -6164 & 711 & -42 & 1 \\
55\,377 & -65\,346 & 28\,519 & -6164 & 711 & -42 & 1 \\
55\,153 & -65\,314 & 28\,519 & -6164 & 711 & -42 & 1 \\
56\,385 & -65\,602 & 28\,535 & -6164 & 711 & -42 & 1 \\
56\,097 & -65\,570 & 28\,535 & -6164 & 711 & -42 & 1 \\
56\,161 & -65\,570 & 28\,535 & -6164 & 711 & -42 & 1 \\
57\,393 & -65\,858 & 28\,551 & -6164 & 711 & -42 & 1 \\
57\,105 & -65\,826 & 28\,551 & -6164 & 711 & -42 & 1 \\
58\,401 & -66\,114 & 28\,567 & -6164 & 711 & -42 & 1 \\
58\,113 & -66\,082 & 28\,567 & -6164 & 711 & -42 & 1 \\
50\,841 & -63\,690 & 28\,319 & -6156 & 711 & -42 & 1 \\
51\,849 & -63\,946 & 28\,335 & -6156 & 711 & -42 & 1 \\
52\,857 & -64\,202 & 28\,351 & -6156 & 711 & -42 & 1 \\
52\,569 & -64\,170 & 28\,351 & -6156 & 711 & -42 & 1 \\
53\,865 & -64\,458 & 28\,367 & -6156 & 711 & -42 & 1 \\
48\,321 & -62\,546 & 28\,151 & -6148 & 711 & -42 & 1 \\
49\,329 & -62\,802 & 28\,167 & -6148 & 711 & -42 & 1 \\
44\,793 & -61\,146 & 27\,967 & -6140 & 711 & -42 & 1
\end{pmatrix}$$

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

$$\{2\,543\,345, -2\,783\,706, 1\,182\,087, -253\,228, 29\,151, -1722, 41\}$$

```
Array[c, 7].Transpose[A]
```

$$\{59\,689\,c[1] - 66\,970\,c[2] + 28\,719\,c[3] - 6172\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$59\,401\,c[1] - 66\,938\,c[2] + 28\,719\,c[3] - 6172\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$60\,633\,c[1] - 67\,226\,c[2] + 28\,735\,c[3] - 6172\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$60\,697\,c[1] - 67\,226\,c[2] + 28\,735\,c[3] - 6172\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$61\,353\,c[1] - 67\,450\,c[2] + 28\,751\,c[3] - 6172\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$54\,145\,c[1] - 65\,058\,c[2] + 28\,503\,c[3] - 6164\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$55\,377\,c[1] - 65\,346\,c[2] + 28\,519\,c[3] - 6164\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$55\,153\,c[1] - 65\,314\,c[2] + 28\,519\,c[3] - 6164\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$56\,385\,c[1] - 65\,602\,c[2] + 28\,535\,c[3] - 6164\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$56\,097\,c[1] - 65\,570\,c[2] + 28\,535\,c[3] - 6164\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$56\,161\,c[1] - 65\,570\,c[2] + 28\,535\,c[3] - 6164\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$57\,393\,c[1] - 65\,858\,c[2] + 28\,551\,c[3] - 6164\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$57\,105\,c[1] - 65\,826\,c[2] + 28\,551\,c[3] - 6164\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$58\,401\,c[1] - 66\,114\,c[2] + 28\,567\,c[3] - 6164\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$58\,113\,c[1] - 66\,082\,c[2] + 28\,567\,c[3] - 6164\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$50\,841\,c[1] - 63\,690\,c[2] + 28\,319\,c[3] - 6156\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$51\,849\,c[1] - 63\,946\,c[2] + 28\,335\,c[3] - 6156\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$52\,857\,c[1] - 64\,202\,c[2] + 28\,351\,c[3] - 6156\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$52\,569\,c[1] - 64\,170\,c[2] + 28\,351\,c[3] - 6156\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$53\,865\,c[1] - 64\,458\,c[2] + 28\,367\,c[3] - 6156\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$48\,321\,c[1] - 62\,546\,c[2] + 28\,151\,c[3] - 6148\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$49\,329\,c[1] - 62\,802\,c[2] + 28\,167\,c[3] - 6148\,c[4] + 711\,c[5] - 42\,c[6] + c[7],$$
$$44\,793\,c[1] - 61\,146\,c[2] + 27\,967\,c[3] - 6140\,c[4] + 711\,c[5] - 42\,c[6] + c[7]\}$$

```
Array[c, 7].g
```

$$2\,543\,345\,c[1] - 2\,783\,706\,c[2] + 1\,182\,087\,c[3] -$$
$$253\,228\,c[4] + 29\,151\,c[5] - 1722\,c[6] + 41\,c[7]$$

```
cert =
 Flatten[Array[c, 7] /. FindInstance[2 543 345 c[1] - 2 783 706 c[2] + 1 182 087 c[3] -
       253 228 c[4] + 29 151 c[5] - 1722 c[6] + 41 c[7] < 0 &&
     59 689 c[1] - 66 970 c[2] + 28 719 c[3] - 6172 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     59 401 c[1] - 66 938 c[2] + 28 719 c[3] - 6172 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     60 633 c[1] - 67 226 c[2] + 28 735 c[3] - 6172 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     60 697 c[1] - 67 226 c[2] + 28 735 c[3] - 6172 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     61 353 c[1] - 67 450 c[2] + 28 751 c[3] - 6172 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     54 145 c[1] - 65 058 c[2] + 28 503 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     55 377 c[1] - 65 346 c[2] + 28 519 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     55 153 c[1] - 65 314 c[2] + 28 519 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     56 385 c[1] - 65 602 c[2] + 28 535 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     56 097 c[1] - 65 570 c[2] + 28 535 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     56 161 c[1] - 65 570 c[2] + 28 535 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     57 393 c[1] - 65 858 c[2] + 28 551 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     57 105 c[1] - 65 826 c[2] + 28 551 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     58 401 c[1] - 66 114 c[2] + 28 567 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     58 113 c[1] - 66 082 c[2] + 28 567 c[3] - 6164 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     50 841 c[1] - 63 690 c[2] + 28 319 c[3] - 6156 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     51 849 c[1] - 63 946 c[2] + 28 335 c[3] - 6156 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     52 857 c[1] - 64 202 c[2] + 28 351 c[3] - 6156 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     52 569 c[1] - 64 170 c[2] + 28 351 c[3] - 6156 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     53 865 c[1] - 64 458 c[2] + 28 367 c[3] - 6156 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     48 321 c[1] - 62 546 c[2] + 28 151 c[3] - 6148 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     49 329 c[1] - 62 802 c[2] + 28 167 c[3] - 6148 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0 &&
     44 793 c[1] - 61 146 c[2] + 27 967 c[3] - 6140 c[4] + 711 c[5] - 42 c[6] + c[7] ≥ 0,
    Array[c, 7], Integers]]
{-603, -549, 0, 0, 0, 0, 0}

GCD[-603, -549, 0, 0, 0, 0, 0]
9

cert = cert / 9
{-67, -61, 0, 0, 0, 0, 0}

Reverse[cert]
{0, 0, 0, 0, 0, -61, -67}

cert.g
-598 049

cert.Transpose[A]
{86 007, 103 351, 38 375, 34 087, 3799, 340 823, 275 847,
 288 903, 223 927, 241 271, 236 983, 172 007, 189 351, 120 087, 137 431,
 478 743, 426 823, 374 903, 392 247, 322 983, 577 799, 525 879, 728 775}
```

```
chi = (-11 + x) (-9 + x)^6 (-7 + x)^8 (-4 + x) (5 + x)^25
```

```
(-11 + x) (-9 + x)^6 (-7 + x)^8 (-4 + x) (5 + x)^25
```

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

```
{{935, -822, 232, -26, 1}, {951, -822, 232, -26, 1},
 {967, -822, 232, -26, 1}, {983, -822, 232, -26, 1},
 {847, -814, 232, -26, 1}, {863, -814, 232, -26, 1}, {879, -814, 232, -26, 1},
 {895, -814, 232, -26, 1}, {911, -814, 232, -26, 1}, {927, -814, 232, -26, 1},
 {791, -806, 232, -26, 1}, {807, -806, 232, -26, 1}, {823, -806, 232, -26, 1},
 {839, -806, 232, -26, 1}, {855, -806, 232, -26, 1}, {735, -798, 232, -26, 1},
 {751, -798, 232, -26, 1}, {767, -798, 232, -26, 1}, {783, -798, 232, -26, 1},
 {679, -790, 232, -26, 1}, {695, -790, 232, -26, 1}, {711, -790, 232, -26, 1},
 {623, -782, 232, -26, 1}, {639, -782, 232, -26, 1}, {567, -774, 232, -26, 1}}
```

```
A = {{935, -822, 232, -26, 1}, {951, -822, 232, -26, 1},
   {967, -822, 232, -26, 1}, {983, -822, 232, -26, 1}, {847, -814, 232, -26, 1},
   {863, -814, 232, -26, 1}, {879, -814, 232, -26, 1}, {895, -814, 232, -26, 1},
   {911, -814, 232, -26, 1}, {927, -814, 232, -26, 1}, {791, -806, 232, -26, 1},
   {807, -806, 232, -26, 1}, {823, -806, 232, -26, 1}, {839, -806, 232, -26, 1},
   {855, -806, 232, -26, 1}, {735, -798, 232, -26, 1}, {751, -798, 232, -26, 1},
   {767, -798, 232, -26, 1}, {783, -798, 232, -26, 1}, {679, -790, 232, -26, 1},
   {695, -790, 232, -26, 1}, {711, -790, 232, -26, 1}, {623, -782, 232, -26, 1},
   {639, -782, 232, -26, 1}, {567, -774, 232, -26, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} 935 & -822 & 232 & -26 & 1 \\ 951 & -822 & 232 & -26 & 1 \\ 967 & -822 & 232 & -26 & 1 \\ 983 & -822 & 232 & -26 & 1 \\ 847 & -814 & 232 & -26 & 1 \\ 863 & -814 & 232 & -26 & 1 \\ 879 & -814 & 232 & -26 & 1 \\ 895 & -814 & 232 & -26 & 1 \\ 911 & -814 & 232 & -26 & 1 \\ 927 & -814 & 232 & -26 & 1 \\ 791 & -806 & 232 & -26 & 1 \\ 807 & -806 & 232 & -26 & 1 \\ 823 & -806 & 232 & -26 & 1 \\ 839 & -806 & 232 & -26 & 1 \\ 855 & -806 & 232 & -26 & 1 \\ 735 & -798 & 232 & -26 & 1 \\ 751 & -798 & 232 & -26 & 1 \\ 767 & -798 & 232 & -26 & 1 \\ 783 & -798 & 232 & -26 & 1 \\ 679 & -790 & 232 & -26 & 1 \\ 695 & -790 & 232 & -26 & 1 \\ 711 & -790 & 232 & -26 & 1 \\ 623 & -782 & 232 & -26 & 1 \\ 639 & -782 & 232 & -26 & 1 \\ 567 & -774 & 232 & -26 & 1 \end{pmatrix}$$

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

$$\{39\,495, -33\,726, 9512, -1066, 41\}$$

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

```
{935 c[1] - 822 c[2] + 232 c[3] - 26 c[4] + c[5],
 951 c[1] - 822 c[2] + 232 c[3] - 26 c[4] + c[5],
 967 c[1] - 822 c[2] + 232 c[3] - 26 c[4] + c[5],
 983 c[1] - 822 c[2] + 232 c[3] - 26 c[4] + c[5],
 847 c[1] - 814 c[2] + 232 c[3] - 26 c[4] + c[5],
 863 c[1] - 814 c[2] + 232 c[3] - 26 c[4] + c[5],
 879 c[1] - 814 c[2] + 232 c[3] - 26 c[4] + c[5],
 895 c[1] - 814 c[2] + 232 c[3] - 26 c[4] + c[5],
 911 c[1] - 814 c[2] + 232 c[3] - 26 c[4] + c[5],
 927 c[1] - 814 c[2] + 232 c[3] - 26 c[4] + c[5],
 791 c[1] - 806 c[2] + 232 c[3] - 26 c[4] + c[5],
 807 c[1] - 806 c[2] + 232 c[3] - 26 c[4] + c[5],
 823 c[1] - 806 c[2] + 232 c[3] - 26 c[4] + c[5],
 839 c[1] - 806 c[2] + 232 c[3] - 26 c[4] + c[5],
 855 c[1] - 806 c[2] + 232 c[3] - 26 c[4] + c[5],
 735 c[1] - 798 c[2] + 232 c[3] - 26 c[4] + c[5],
 751 c[1] - 798 c[2] + 232 c[3] - 26 c[4] + c[5],
 767 c[1] - 798 c[2] + 232 c[3] - 26 c[4] + c[5],
 783 c[1] - 798 c[2] + 232 c[3] - 26 c[4] + c[5],
 679 c[1] - 790 c[2] + 232 c[3] - 26 c[4] + c[5],
 695 c[1] - 790 c[2] + 232 c[3] - 26 c[4] + c[5],
 711 c[1] - 790 c[2] + 232 c[3] - 26 c[4] + c[5],
 623 c[1] - 782 c[2] + 232 c[3] - 26 c[4] + c[5],
 639 c[1] - 782 c[2] + 232 c[3] - 26 c[4] + c[5],
 567 c[1] - 774 c[2] + 232 c[3] - 26 c[4] + c[5]}
```

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

```
39 495 c[1] - 33 726 c[2] + 9512 c[3] - 1066 c[4] + 41 c[5]
```

```
cert = Flatten[Array[c, 5] /.
    FindInstance[39 495 c[1] - 33 726 c[2] + 9512 c[3] - 1066 c[4] + 41 c[5] < 0 &&
      935 c[1] - 822 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      951 c[1] - 822 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      967 c[1] - 822 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      983 c[1] - 822 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      847 c[1] - 814 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      863 c[1] - 814 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      879 c[1] - 814 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      895 c[1] - 814 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      911 c[1] - 814 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      927 c[1] - 814 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      791 c[1] - 806 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      807 c[1] - 806 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      823 c[1] - 806 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      839 c[1] - 806 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      855 c[1] - 806 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      735 c[1] - 798 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      751 c[1] - 798 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      767 c[1] - 798 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      783 c[1] - 798 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      679 c[1] - 790 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      695 c[1] - 790 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      711 c[1] - 790 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      623 c[1] - 782 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      639 c[1] - 782 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0 &&
      567 c[1] - 774 c[2] + 232 c[3] - 26 c[4] + c[5] ≥ 0, Array[c, 5], Integers]]
```

```
{0, 3493, 0, 0, 2 871 696}
```

```
GCD[0, 3493, 0, 0, 2 871 696]
```

```
1
```

```
Reverse[cert]
```

```
{2 871 696, 0, 0, 3493, 0}
```

```
cert.g
```

```
-65 382
```

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

```
{450, 450, 450, 450, 28 394, 28 394, 28 394, 28 394, 28 394,
 28 394, 56 338, 56 338, 56 338, 56 338, 56 338, 84 282, 84 282,
 84 282, 84 282, 112 226, 112 226, 112 226, 140 170, 140 170, 168 114}
```

```
chi = (-9 + x)^8 (-7 + x)^4 (-5 + x)^2 (5 + x)^25 (52 - 15 x + x^2)
```

```
(-9 + x)^8 (-7 + x)^4 (-5 + x)^2 (5 + x)^25 (52 - 15 x + x^2)
```

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

```
{{-5715, 5693, -2110, 370, -31, 1}, {-5355, 5581, -2102, 370, -31, 1}}
```

```
A = {{-5715, 5693, -2110, 370, -31, 1}, {-5355, 5581, -2102, 370, -31, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} -5715 & 5693 & -2110 & 370 & -31 & 1 \\ -5355 & 5581 & -2102 & 370 & -31 & 1 \end{pmatrix}$$

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

```
{-233515, 233557, -86558, 15170, -1271, 41}
```

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

```
{-5715 c[1] + 5693 c[2] - 2110 c[3] + 370 c[4] - 31 c[5] + c[6],
 -5355 c[1] + 5581 c[2] - 2102 c[3] + 370 c[4] - 31 c[5] + c[6]}
```

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

```
-233515 c[1] + 233557 c[2] - 86558 c[3] + 15170 c[4] - 1271 c[5] + 41 c[6]
```

```
cert = Flatten[Array[c, 6] /. FindInstance[
    -233515 c[1] + 233557 c[2] - 86558 c[3] + 15170 c[4] - 1271 c[5] + 41 c[6] < 0 &&
     -5715 c[1] + 5693 c[2] - 2110 c[3] + 370 c[4] - 31 c[5] + c[6] ≥ 0 && -5355 c[1] +
       5581 c[2] - 2102 c[3] + 370 c[4] - 31 c[5] + c[6] ≥ 0, Array[c, 6], Integers]]
```

```
{14, 1163, 15610, 0, 0, 26404920}
```

```
GCD[14, 1163, 15610, 0, 0, 26404920]
```

```
1
```

```
Reverse[cert]
```

```
{26404920, 0, 0, 15610, 1163, 14}
```

```
cert.g
```

```
-211079
```

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

```
{8769, 8433}
```

```
chi = (-9 + x)^7 (-7 + x)^6 (5 + x)^25 (-232 + 123 x - 20 x^2 + x^3)
```

$$(-9+x)^7\,(-7+x)^6\,(5+x)^{25}\left(-232+123\,x-20\,x^2+x^3\right)$$

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

```
{{-5239, 5345, -2042, 366, -31, 1},
 {-4767, 5217, -2034, 366, -31, 1}, {-4879, 5233, -2034, 366, -31, 1},
 {-4847, 5233, -2034, 366, -31, 1}, {-4991, 5249, -2034, 366, -31, 1},
 {-4959, 5249, -2034, 366, -31, 1}, {-4263, 5089, -2026, 366, -31, 1},
 {-4375, 5105, -2026, 366, -31, 1}, {-4487, 5121, -2026, 366, -31, 1},
 {-4455, 5121, -2026, 366, -31, 1}, {-4599, 5137, -2026, 366, -31, 1},
 {-3871, 4977, -2018, 366, -31, 1}, {-3983, 4993, -2018, 366, -31, 1},
 {-4095, 5009, -2018, 366, -31, 1}, {-3591, 4881, -2010, 366, -31, 1}}
```

```
A = {{-5239, 5345, -2042, 366, -31, 1},
    {-4767, 5217, -2034, 366, -31, 1}, {-4879, 5233, -2034, 366, -31, 1},
    {-4847, 5233, -2034, 366, -31, 1}, {-4991, 5249, -2034, 366, -31, 1},
    {-4959, 5249, -2034, 366, -31, 1}, {-4263, 5089, -2026, 366, -31, 1},
    {-4375, 5105, -2026, 366, -31, 1}, {-4487, 5121, -2026, 366, -31, 1},
    {-4455, 5121, -2026, 366, -31, 1}, {-4599, 5137, -2026, 366, -31, 1},
    {-3871, 4977, -2018, 366, -31, 1}, {-3983, 4993, -2018, 366, -31, 1},
    {-4095, 5009, -2018, 366, -31, 1}, {-3591, 4881, -2010, 366, -31, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix}
-5239 & 5345 & -2042 & 366 & -31 & 1 \\
-4767 & 5217 & -2034 & 366 & -31 & 1 \\
-4879 & 5233 & -2034 & 366 & -31 & 1 \\
-4847 & 5233 & -2034 & 366 & -31 & 1 \\
-4991 & 5249 & -2034 & 366 & -31 & 1 \\
-4959 & 5249 & -2034 & 366 & -31 & 1 \\
-4263 & 5089 & -2026 & 366 & -31 & 1 \\
-4375 & 5105 & -2026 & 366 & -31 & 1 \\
-4487 & 5121 & -2026 & 366 & -31 & 1 \\
-4455 & 5121 & -2026 & 366 & -31 & 1 \\
-4599 & 5137 & -2026 & 366 & -31 & 1 \\
-3871 & 4977 & -2018 & 366 & -31 & 1 \\
-3983 & 4993 & -2018 & 366 & -31 & 1 \\
-4095 & 5009 & -2018 & 366 & -31 & 1 \\
-3591 & 4881 & -2010 & 366 & -31 & 1
\end{pmatrix}$$

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

$$\{-207\,175,\ 217\,305,\ -83\,618,\ 15\,006,\ -1271,\ 41\}$$

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

```
{-5239 c[1] + 5345 c[2] - 2042 c[3] + 366 c[4] - 31 c[5] + c[6],
 -4767 c[1] + 5217 c[2] - 2034 c[3] + 366 c[4] - 31 c[5] + c[6],
 -4879 c[1] + 5233 c[2] - 2034 c[3] + 366 c[4] - 31 c[5] + c[6],
 -4847 c[1] + 5233 c[2] - 2034 c[3] + 366 c[4] - 31 c[5] + c[6],
 -4991 c[1] + 5249 c[2] - 2034 c[3] + 366 c[4] - 31 c[5] + c[6],
 -4959 c[1] + 5249 c[2] - 2034 c[3] + 366 c[4] - 31 c[5] + c[6],
 -4263 c[1] + 5089 c[2] - 2026 c[3] + 366 c[4] - 31 c[5] + c[6],
 -4375 c[1] + 5105 c[2] - 2026 c[3] + 366 c[4] - 31 c[5] + c[6],
 -4487 c[1] + 5121 c[2] - 2026 c[3] + 366 c[4] - 31 c[5] + c[6],
 -4455 c[1] + 5121 c[2] - 2026 c[3] + 366 c[4] - 31 c[5] + c[6],
 -4599 c[1] + 5137 c[2] - 2026 c[3] + 366 c[4] - 31 c[5] + c[6],
 -3871 c[1] + 4977 c[2] - 2018 c[3] + 366 c[4] - 31 c[5] + c[6],
 -3983 c[1] + 4993 c[2] - 2018 c[3] + 366 c[4] - 31 c[5] + c[6],
 -4095 c[1] + 5009 c[2] - 2018 c[3] + 366 c[4] - 31 c[5] + c[6],
 -3591 c[1] + 4881 c[2] - 2010 c[3] + 366 c[4] - 31 c[5] + c[6]}
```

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

```
-207 175 c[1] + 217 305 c[2] - 83 618 c[3] + 15 006 c[4] - 1271 c[5] + 41 c[6]
```

```
cert = Flatten[Array[c, 6] /. FindInstance[
    -207 175 c[1] + 217 305 c[2] - 83 618 c[3] + 15 006 c[4] - 1271 c[5] + 41 c[6] < 0 &&
     -5239 c[1] + 5345 c[2] - 2042 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -4767 c[1] + 5217 c[2] - 2034 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -4879 c[1] + 5233 c[2] - 2034 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -4847 c[1] + 5233 c[2] - 2034 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -4991 c[1] + 5249 c[2] - 2034 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -4959 c[1] + 5249 c[2] - 2034 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -4263 c[1] + 5089 c[2] - 2026 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -4375 c[1] + 5105 c[2] - 2026 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -4487 c[1] + 5121 c[2] - 2026 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -4455 c[1] + 5121 c[2] - 2026 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -4599 c[1] + 5137 c[2] - 2026 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -3871 c[1] + 4977 c[2] - 2018 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -3983 c[1] + 4993 c[2] - 2018 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -4095 c[1] + 5009 c[2] - 2018 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0 &&
     -3591 c[1] + 4881 c[2] - 2010 c[3] + 366 c[4] - 31 c[5] + c[6] ≥ 0,
    Array[c, 6], Integers]]
```

```
{-1026, -4476, -9088, 0, 0, 0}
```

```
GCD[-1026, -4476, -9088, 0, 0, 0]
```

```
2
```

```
cert = cert / 2
```

```
{-513, -2238, -4544, 0, 0, 0}
```

```
Reverse[cert]
```

```
{0, 0, 0, -4544, -2238, -513}
```

```
cert.g
```

```
-87623
```

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

```
{4345, 12321, 33969, 17553, 55617, 39201, 3881,
 25529, 47177, 30761, 68825, 17089, 38737, 60385, 51945}
```

```
chi = (-9 + x)^6 (-7 + x)^7 (5 + x)^25 (-292 + 149 x - 22 x^2 + x^3)
```

```
(-9 + x)^6 (-7 + x)^7 (5 + x)^25 (-292 + 149 x - 22 x^2 + x^3)
```

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

```
{{-5985, 6497, -2430, 414, -33, 1}, {-6129, 6513, -2430, 414, -33, 1},
 {-6273, 6529, -2430, 414, -33, 1}, {-6417, 6545, -2430, 414, -33, 1},
 {-5481, 6369, -2422, 414, -33, 1}, {-5625, 6385, -2422, 414, -33, 1},
 {-5769, 6401, -2422, 414, -33, 1}, {-4977, 6241, -2414, 414, -33, 1},
 {-5121, 6257, -2414, 414, -33, 1}, {-4473, 6113, -2406, 414, -33, 1},
 {-4617, 6129, -2406, 414, -33, 1}, {-3969, 5985, -2398, 414, -33, 1}}
```

```
A = {{-5985, 6497, -2430, 414, -33, 1}, {-6129, 6513, -2430, 414, -33, 1},
    {-6273, 6529, -2430, 414, -33, 1}, {-6417, 6545, -2430, 414, -33, 1},
    {-5481, 6369, -2422, 414, -33, 1}, {-5625, 6385, -2422, 414, -33, 1},
    {-5769, 6401, -2422, 414, -33, 1}, {-4977, 6241, -2414, 414, -33, 1},
    {-5121, 6257, -2414, 414, -33, 1}, {-4473, 6113, -2406, 414, -33, 1},
    {-4617, 6129, -2406, 414, -33, 1}, {-3969, 5985, -2398, 414, -33, 1}};
```

```
A // MatrixForm
```

$$\begin{pmatrix} -5985 & 6497 & -2430 & 414 & -33 & 1 \\ -6129 & 6513 & -2430 & 414 & -33 & 1 \\ -6273 & 6529 & -2430 & 414 & -33 & 1 \\ -6417 & 6545 & -2430 & 414 & -33 & 1 \\ -5481 & 6369 & -2422 & 414 & -33 & 1 \\ -5625 & 6385 & -2422 & 414 & -33 & 1 \\ -5769 & 6401 & -2422 & 414 & -33 & 1 \\ -4977 & 6241 & -2414 & 414 & -33 & 1 \\ -5121 & 6257 & -2414 & 414 & -33 & 1 \\ -4473 & 6113 & -2406 & 414 & -33 & 1 \\ -4617 & 6129 & -2406 & 414 & -33 & 1 \\ -3969 & 5985 & -2398 & 414 & -33 & 1 \end{pmatrix}$$

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

```
{-259665, 268537, -99702, 16974, -1353, 41}
```

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

```
{-5985 c[1] + 6497 c[2] - 2430 c[3] + 414 c[4] - 33 c[5] + c[6],
 -6129 c[1] + 6513 c[2] - 2430 c[3] + 414 c[4] - 33 c[5] + c[6],
 -6273 c[1] + 6529 c[2] - 2430 c[3] + 414 c[4] - 33 c[5] + c[6],
 -6417 c[1] + 6545 c[2] - 2430 c[3] + 414 c[4] - 33 c[5] + c[6],
 -5481 c[1] + 6369 c[2] - 2422 c[3] + 414 c[4] - 33 c[5] + c[6],
 -5625 c[1] + 6385 c[2] - 2422 c[3] + 414 c[4] - 33 c[5] + c[6],
 -5769 c[1] + 6401 c[2] - 2422 c[3] + 414 c[4] - 33 c[5] + c[6],
 -4977 c[1] + 6241 c[2] - 2414 c[3] + 414 c[4] - 33 c[5] + c[6],
 -5121 c[1] + 6257 c[2] - 2414 c[3] + 414 c[4] - 33 c[5] + c[6],
 -4473 c[1] + 6113 c[2] - 2406 c[3] + 414 c[4] - 33 c[5] + c[6],
 -4617 c[1] + 6129 c[2] - 2406 c[3] + 414 c[4] - 33 c[5] + c[6],
 -3969 c[1] + 5985 c[2] - 2398 c[3] + 414 c[4] - 33 c[5] + c[6]}
```

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

```
-259665 c[1] + 268537 c[2] - 99702 c[3] + 16974 c[4] - 1353 c[5] + 41 c[6]
```

```
cert = Flatten[Array[c, 6] /. FindInstance[
    -259665 c[1] + 268537 c[2] - 99702 c[3] + 16974 c[4] - 1353 c[5] + 41 c[6] < 0 &&
     -5985 c[1] + 6497 c[2] - 2430 c[3] + 414 c[4] - 33 c[5] + c[6] ≥ 0 &&
     -6129 c[1] + 6513 c[2] - 2430 c[3] + 414 c[4] - 33 c[5] + c[6] ≥ 0 &&
     -6273 c[1] + 6529 c[2] - 2430 c[3] + 414 c[4] - 33 c[5] + c[6] ≥ 0 &&
     -6417 c[1] + 6545 c[2] - 2430 c[3] + 414 c[4] - 33 c[5] + c[6] ≥ 0 &&
     -5481 c[1] + 6369 c[2] - 2422 c[3] + 414 c[4] - 33 c[5] + c[6] ≥ 0 &&
     -5625 c[1] + 6385 c[2] - 2422 c[3] + 414 c[4] - 33 c[5] + c[6] ≥ 0 &&
     -5769 c[1] + 6401 c[2] - 2422 c[3] + 414 c[4] - 33 c[5] + c[6] ≥ 0 &&
     -4977 c[1] + 6241 c[2] - 2414 c[3] + 414 c[4] - 33 c[5] + c[6] ≥ 0 &&
     -5121 c[1] + 6257 c[2] - 2414 c[3] + 414 c[4] - 33 c[5] + c[6] ≥ 0 &&
     -4473 c[1] + 6113 c[2] - 2406 c[3] + 414 c[4] - 33 c[5] + c[6] ≥ 0 &&
     -4617 c[1] + 6129 c[2] - 2406 c[3] + 414 c[4] - 33 c[5] + c[6] ≥ 0 &&
     -3969 c[1] + 5985 c[2] - 2398 c[3] + 414 c[4] - 33 c[5] + c[6] ≥ 0,
    Array[c, 6], Integers]]
```

```
{-180, -1613, -3873, 0, 0, 0}
```

```
GCD[-180, -1613, -3873, 0, 0, 0]
```

```
1
```

```
Reverse[cert]
```

```
{0, 0, 0, -3873, -1613, -180}
```

```
cert.g
```

```
-264635
```

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

```
{9029, 9141, 9253, 9365, 93789, 93901,
 94013, 178549, 178661, 263309, 263421, 348069}
```