OpenGeoProver Output for conjecture "geothm_zadatak"

Wu's method used

September 30, 2016

1 Invoking the theorem prover

The used proving method is Wu's method.

The input system is:

$$
\begin{aligned}
p_1 &= 2x_1 - \\
p_2 &= 2x_2 - \\
p_3 &= 2x_4 - x_1 \\
p_4 &= 2x_5 - x_2 \\
p_5 &= 2x_6 - x_3 \\
p_6 &= 2x_7 - x_1 - \\
p_7 &= 2x_8 - x_2 \\
p_8 &= 2x_9 - x_3 \\
p_9 &= 2x_{10} - x_1 - \\
p_{10} &= 2x_{11} - x_2 - \\
p_{11} &= 2x_{12} - x_3 \\
p_{12} &= 2x_{13} - x_1 \\
p_{13} &= 2x_{14} - x_2 - \\
p_{14} &= 2x_{15} - x_3 \\
p_{15} &= x_{16} - x_{12}x_8 + x_{12}x_5 + x_{11}x_9 - x_{11}x_6 - x_9x_5 + x_8x_6 \\
p_{16} &= x_{17} + x_{12}x_7 - x_{12}x_4 - x_{10}x_9 + x_{10}x_6 + x_9x_4 - x_7x_6 \\
p_{17} &= x_{18} - x_{11}x_7 + x_{11}x_4 + x_{10}x_8 - x_{10}x_5 - x_8x_4 + x_7x_5 \\
p_{18} &= x_{19} + x_{18}x_6 + x_{17}x_5 + x_{16}x_4 \\
p_{19} &= -x_{23}x_{16} + x_{20} - x_1 \\
p_{20} &= -x_{23}x_{17} + x_{21} - x_2 \\
p_{21} &= -x_{23}x_{18} + x_{22} - x_3 \\
p_{22} &= x_{22}x_{18} + x_{21}x_{17} + x_{20}x_{16} + x_{19} \\
p_{23} &= x_{24} - \\
p_{24} &= x_{25} - x_1 \\
p_{25} &= x_{26} - x_2
\end{aligned}
$$

$$
\begin{aligned}
p_{26} &= -x_{28}x_{24} + x_{27} - x_3 \\
p_{27} &= x_{27}x_{24}
\end{aligned}
$$

1.1 Triangulation, step 1

Choosing variable: Trying the variable with index 27.

Variable x_{27} selected: The number of polynomials with this variable, with indexes from 1 to 27, is 2.

Minimal degrees: 2 polynomial(s) with degree 1.

Polynomial with linear degree: Removing variable x_{27} from all other polynomials by reducing them with polynomial p_{26} from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_1 &= 2x_1 - \\
p_2 &= 2x_2 - \\
p_3 &= 2x_4 - x_1 \\
p_4 &= 2x_5 - x_2 \\
p_5 &= 2x_6 - x_3 \\
p_6 &= 2x_7 - x_1 - \\
p_7 &= 2x_8 - x_2 \\
p_8 &= 2x_9 - x_3 \\
p_9 &= 2x_{10} - x_1 - \\
p_{10} &= 2x_{11} - x_2 - \\
p_{11} &= 2x_{12} - x_3 \\
p_{12} &= 2x_{13} - x_1 \\
p_{13} &= 2x_{14} - x_2 - \\
p_{14} &= 2x_{15} - x_3 \\
p_{15} &= x_{16} - x_{12}x_8 + x_{12}x_5 + x_{11}x_9 - x_{11}x_6 - x_9x_5 + x_8x_6 \\
p_{16} &= x_{17} + x_{12}x_7 - x_{12}x_4 - x_{10}x_9 + x_{10}x_6 + x_9x_4 - x_7x_6 \\
p_{17} &= x_{18} - x_{11}x_7 + x_{11}x_4 + x_{10}x_8 - x_{10}x_5 - x_8x_4 + x_7x_5 \\
p_{18} &= x_{19} + x_{18}x_6 + x_{17}x_5 + x_{16}x_4 \\
p_{19} &= -x_{23}x_{16} + x_{20} - x_1 \\
p_{20} &= -x_{23}x_{17} + x_{21} - x_2 \\
p_{21} &= -x_{23}x_{18} + x_{22} - x_3 \\
p_{22} &= x_{22}x_{18} + x_{21}x_{17} + x_{20}x_{16} + x_{19} \\
p_{23} &= x_{24} - \\
p_{24} &= x_{25} - x_1 \\
p_{25} &= x_{26} - x_2 \\
p_{26} &= x_{28}x_{24}^2 + x_{24}x_3 \\
p_{27} &= -x_{28}x_{24} + x_{27} - x_3
\end{aligned}
$$

1.2 Triangulation, step 2

Choosing variable: Trying the variable with index 26.

Variable x_{26} selected: The number of polynomials with this variable, with indexes from 1 to 26, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{25}. No reduction needed.

The triangular system has not been changed.

1.3 Triangulation, step 3

Choosing variable: Trying the variable with index 25.

Variable x_{25} selected: The number of polynomials with this variable, with indexes from 1 to 25, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{24}. No reduction needed.

The triangular system has not been changed.

1.4 Triangulation, step 4

Choosing variable: Trying the variable with index 24.

Variable x_{24} selected: The number of polynomials with this variable, with indexes from 1 to 24, is 2.

Minimal degrees: 1 polynomial(s) with degree 1 and 1 polynomial(s) with degree 2.

Polynomial with linear degree: Removing variable x_{24} from all other polynomials by reducing them with polynomial p_{23} from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_1 &= 2x_1 - \\
p_2 &= 2x_2 - \\
p_3 &= 2x_4 - x_1 \\
p_4 &= 2x_5 - x_2 \\
p_5 &= 2x_6 - x_3 \\
p_6 &= 2x_7 - x_1 - \\
p_7 &= 2x_8 - x_2 \\
p_8 &= 2x_9 - x_3 \\
p_9 &= 2x_{10} - x_1 - \\
p_{10} &= 2x_{11} - x_2 - \\
p_{11} &= 2x_{12} - x_3
\end{aligned}
$$

$$
\begin{aligned}
p_{12} &= 2x_{13} - x_1 \\
p_{13} &= 2x_{14} - x_2 - \\
p_{14} &= 2x_{15} - x_3 \\
p_{15} &= x_{16} - x_{12}x_8 + x_{12}x_5 + x_{11}x_9 - x_{11}x_6 - x_9x_5 + x_8x_6 \\
p_{16} &= x_{17} + x_{12}x_7 - x_{12}x_4 - x_{10}x_9 + x_{10}x_6 + x_9x_4 - x_7x_6 \\
p_{17} &= x_{18} - x_{11}x_7 + x_{11}x_4 + x_{10}x_8 - x_{10}x_5 - x_8x_4 + x_7x_5 \\
p_{18} &= x_{19} + x_{18}x_6 + x_{17}x_5 + x_{16}x_4 \\
p_{19} &= -x_{23}x_{16} + x_{20} - x_1 \\
p_{20} &= -x_{23}x_{17} + x_{21} - x_2 \\
p_{21} &= -x_{23}x_{18} + x_{22} - x_3 \\
p_{22} &= x_{22}x_{18} + x_{21}x_{17} + x_{20}x_{16} + x_{19} \\
p_{23} &= x_{28} + x_3 \\
p_{24} &= x_{24} - \\
p_{25} &= x_{25} - x_1 \\
p_{26} &= x_{26} - x_2 \\
p_{27} &= -x_{28}x_{24} + x_{27} - x_3
\end{aligned}
$$

1.5 Triangulation, step 5

Choosing variable: Trying the variable with index 23.

Variable x_{23} selected: The number of polynomials with this variable, with indexes from 1 to 23, is 3.

Minimal degrees: 3 polynomial(s) with degree 1.

Polynomial with linear degree: Removing variable x_{23} from all other polynomials by reducing them with polynomial p_{19} from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_1 &= 2x_1 - \\
p_2 &= 2x_2 - \\
p_3 &= 2x_4 - x_1 \\
p_4 &= 2x_5 - x_2 \\
p_5 &= 2x_6 - x_3 \\
p_6 &= 2x_7 - x_1 - \\
p_7 &= 2x_8 - x_2 \\
p_8 &= 2x_9 - x_3 \\
p_9 &= 2x_{10} - x_1 - \\
p_{10} &= 2x_{11} - x_2 - \\
p_{11} &= 2x_{12} - x_3 \\
p_{12} &= 2x_{13} - x_1 \\
p_{13} &= 2x_{14} - x_2 -
\end{aligned}
$$

$$
\begin{aligned}
p_{14} &= 2x_{15} - x_3 \\
p_{15} &= x_{16} - x_{12}x_8 + x_{12}x_5 + x_{11}x_9 - x_{11}x_6 - x_9x_5 + x_8x_6 \\
p_{16} &= x_{17} + x_{12}x_7 - x_{12}x_4 - x_{10}x_9 + x_{10}x_6 + x_9x_4 - x_7x_6 \\
p_{17} &= x_{18} - x_{11}x_7 + x_{11}x_4 + x_{10}x_8 - x_{10}x_5 - x_8x_4 + x_7x_5 \\
p_{18} &= x_{19} + x_{18}x_6 + x_{17}x_5 + x_{16}x_4 \\
p_{19} &= x_{22}x_{18} + x_{21}x_{17} + x_{20}x_{16} + x_{19} \\
p_{20} &= x_{28} + x_3 \\
p_{21} &= -x_{21}x_{16} + x_{20}x_{17} - x_{17}x_1 + x_{16}x_2 \\
p_{22} &= -x_{22}x_{16} + x_{20}x_{18} - x_{18}x_1 + x_{16}x_3 \\
p_{23} &= -x_{23}x_{16} + x_{20} - x_1 \\
p_{24} &= x_{24} - \\
p_{25} &= x_{25} - x_1 \\
p_{26} &= x_{26} - x_2 \\
p_{27} &= -x_{28}x_{24} + x_{27} - x_3
\end{aligned}
$$

1.6 Triangulation, step 6

Choosing variable: Trying the variable with index 22.

Variable x_{22} selected: The number of polynomials with this variable, with indexes from 1 to 22, is 2.

Minimal degrees: 2 polynomial(s) with degree 1.

Polynomial with linear degree: Removing variable x_{22} from all other polynomials by reducing them with polynomial p_{19} from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_1 &= 2x_1 - \\
p_2 &= 2x_2 - \\
p_3 &= 2x_4 - x_1 \\
p_4 &= 2x_5 - x_2 \\
p_5 &= 2x_6 - x_3 \\
p_6 &= 2x_7 - x_1 - \\
p_7 &= 2x_8 - x_2 \\
p_8 &= 2x_9 - x_3 \\
p_9 &= 2x_{10} - x_1 - \\
p_{10} &= 2x_{11} - x_2 - \\
p_{11} &= 2x_{12} - x_3 \\
p_{12} &= 2x_{13} - x_1 \\
p_{13} &= 2x_{14} - x_2 - \\
p_{14} &= 2x_{15} - x_3 \\
p_{15} &= x_{16} - x_{12}x_8 + x_{12}x_5 + x_{11}x_9 - x_{11}x_6 - x_9x_5 + x_8x_6
\end{aligned}
$$

$$
\begin{aligned}
p_{16} &= x_{17} + x_{12}x_7 - x_{12}x_4 - x_{10}x_9 + x_{10}x_6 + x_9x_4 - x_7x_6 \\
p_{17} &= x_{18} - x_{11}x_7 + x_{11}x_4 + x_{10}x_8 - x_{10}x_5 - x_8x_4 + x_7x_5 \\
p_{18} &= x_{19} + x_{18}x_6 + x_{17}x_5 + x_{16}x_4 \\
p_{19} &= x_{28} + x_3 \\
p_{20} &= -x_{21}x_{16} + x_{20}x_{17} - x_{17}x_1 + x_{16}x_2 \\
p_{21} &= x_{21}x_{17}x_{16} + x_{20}x_{18}^2 + x_{20}x_{16}^2 + x_{19}x_{16} - x_{18}^2x_1 + \\
&\quad x_{18}x_{16}x_3 \\
p_{22} &= x_{22}x_{18} + x_{21}x_{17} + x_{20}x_{16} + x_{19} \\
p_{23} &= -x_{23}x_{16} + x_{20} - x_1 \\
p_{24} &= x_{24} - \\
p_{25} &= x_{25} - x_1 \\
p_{26} &= x_{26} - x_2 \\
p_{27} &= -x_{28}x_{24} + x_{27} - x_3
\end{aligned}
$$

1.7 Triangulation, step 7

Choosing variable: Trying the variable with index 21.

Variable x_{21} selected: The number of polynomials with this variable, with indexes from 1 to 21, is 2.

Minimal degrees: 2 polynomial(s) with degree 1.

Polynomial with linear degree: Removing variable x_{21} from all other polynomials by reducing them with polynomial p_{20} from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_1 &= 2x_1 - \\
p_2 &= 2x_2 - \\
p_3 &= 2x_4 - x_1 \\
p_4 &= 2x_5 - x_2 \\
p_5 &= 2x_6 - x_3 \\
p_6 &= 2x_7 - x_1 - \\
p_7 &= 2x_8 - x_2 \\
p_8 &= 2x_9 - x_3 \\
p_9 &= 2x_{10} - x_1 - \\
p_{10} &= 2x_{11} - x_2 - \\
p_{11} &= 2x_{12} - x_3 \\
p_{12} &= 2x_{13} - x_1 \\
p_{13} &= 2x_{14} - x_2 - \\
p_{14} &= 2x_{15} - x_3 \\
p_{15} &= x_{16} - x_{12}x_8 + x_{12}x_5 + x_{11}x_9 - x_{11}x_6 - x_9x_5 + x_8x_6 \\
p_{16} &= x_{17} + x_{12}x_7 - x_{12}x_4 - x_{10}x_9 + x_{10}x_6 + x_9x_4 - x_7x_6
\end{aligned}
$$

$$
\begin{aligned}
p_{17} &= x_{18} - x_{11}x_7 + x_{11}x_4 + x_{10}x_8 - x_{10}x_5 - x_8x_4 + x_7x_5 \\
p_{18} &= x_{19} + x_{18}x_6 + x_{17}x_5 + x_{16}x_4 \\
p_{19} &= x_{28} + x_3 \\
p_{20} &= -x_{20}x_{18}^2x_{16} - x_{20}x_{17}^2x_{16} - x_{20}x_{16}^3 - x_{19}x_{16}^2 + \\
&\quad x_{18}^2x_{16}x_1 - x_{18}x_{16}^2x_3 + x_{17}^2x_{16}x_1 - x_{17}x_{16}^2x_2 \\
p_{21} &= -x_{21}x_{16} + x_{20}x_{17} - x_{17}x_1 + x_{16}x_2 \\
p_{22} &= x_{22}x_{18} + x_{21}x_{17} + x_{20}x_{16} + x_{19} \\
p_{23} &= -x_{23}x_{16} + x_{20} - x_1 \\
p_{24} &= x_{24} - \\
p_{25} &= x_{25} - x_1 \\
p_{26} &= x_{26} - x_2 \\
p_{27} &= -x_{28}x_{24} + x_{27} - x_3
\end{aligned}
$$

1.8 Triangulation, step 8

Choosing variable: Trying the variable with index 20.

Variable x_{20} selected: The number of polynomials with this variable, with indexes from 1 to 20, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{20}. No reduction needed.

The triangular system has not been changed.

1.9 Triangulation, step 9

Choosing variable: Trying the variable with index 19.

Variable x_{19} selected: The number of polynomials with this variable, with indexes from 1 to 19, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{18}. No reduction needed.

The triangular system has not been changed.

1.10 Triangulation, step 10

Choosing variable: Trying the variable with index 18.

Variable x_{18} selected: The number of polynomials with this variable, with indexes from 1 to 18, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{17}. No reduction needed.

The triangular system has not been changed.

1.11 Triangulation, step 11

Choosing variable: Trying the variable with index 17.

Variable x_{17} selected: The number of polynomials with this variable, with indexes from 1 to 17, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{16}. No reduction needed.

The triangular system has not been changed.

1.12 Triangulation, step 12

Choosing variable: Trying the variable with index 16.

Variable x_{16} selected: The number of polynomials with this variable, with indexes from 1 to 16, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{15}. No reduction needed.

The triangular system has not been changed.

1.13 Triangulation, step 13

Choosing variable: Trying the variable with index 15.

Variable x_{15} selected: The number of polynomials with this variable, with indexes from 1 to 15, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{14}. No reduction needed.

The triangular system has not been changed.

1.14 Triangulation, step 14

Choosing variable: Trying the variable with index 14.

Variable x_{14} selected: The number of polynomials with this variable, with indexes from 1 to 14, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{13}. No reduction needed.

The triangular system has not been changed.

1.15 Triangulation, step 15

Choosing variable: Trying the variable with index 13.

Variable x_{13} selected: The number of polynomials with this variable, with indexes from 1 to 13, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{12}. No reduction needed.

The triangular system has not been changed.

1.16 Triangulation, step 16

Choosing variable: Trying the variable with index 12.

Variable x_{12} selected: The number of polynomials with this variable, with indexes from 1 to 12, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{11}. No reduction needed.

The triangular system has not been changed.

1.17 Triangulation, step 17

Choosing variable: Trying the variable with index 11.

Variable x_{11} selected: The number of polynomials with this variable, with indexes from 1 to 11, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{10}. No reduction needed.

The triangular system has not been changed.

1.18 Triangulation, step 18

Choosing variable: Trying the variable with index 10.

Variable x_{10} selected: The number of polynomials with this variable, with indexes from 1 to 10, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_9. No reduction needed.

The triangular system has not been changed.

1.19 Triangulation, step 19

Choosing variable: Trying the variable with index 9.

Variable x_9 selected: The number of polynomials with this variable, with indexes from 1 to 9, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_8. No reduction needed.

The triangular system has not been changed.

1.20 Triangulation, step 20

Choosing variable: Trying the variable with index 8.

Variable x_8 selected: The number of polynomials with this variable, with indexes from 1 to 8, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_7. No reduction needed.

The triangular system has not been changed.

1.21 Triangulation, step 21

Choosing variable: Trying the variable with index 7.

Variable x_7 selected: The number of polynomials with this variable, with indexes from 1 to 7, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_6. No reduction needed.

The triangular system has not been changed.

1.22 Triangulation, step 22

Choosing variable: Trying the variable with index 6.

Variable x_6 selected: The number of polynomials with this variable, with indexes from 1 to 6, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_5. No reduction needed.

The triangular system has not been changed.

1.23 Triangulation, step 23

Choosing variable: Trying the variable with index 5.

Variable x_5 selected: The number of polynomials with this variable, with indexes from 1 to 5, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_4. No reduction needed.

The triangular system has not been changed.

1.24 Triangulation, step 24

Choosing variable: Trying the variable with index 4.

Variable x_4 selected: The number of polynomials with this variable, with indexes from 1 to 4, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_3. No reduction needed.

The triangular system has not been changed.

1.25 Triangulation, step 25

Choosing variable: Trying the variable with index 3.

Variable x_3 selected: The number of polynomials with this variable, with indexes from 1 to 3, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_3. No reduction needed.

The triangular system has not been changed.

1.26 Triangulation, step 26

Choosing variable: Trying the variable with index 2.

Variable x_2 selected: The number of polynomials with this variable, with indexes from 1 to 2, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_2. No reduction needed.

The triangular system has not been changed.

1.27 Triangulation, step 27

Choosing variable: Trying the variable with index 1.

Variable x_1 selected: The number of polynomials with this variable, with indexes from 1 to 1, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_1. No reduction needed.

The triangular system has not been changed.

The triangular system is:

$$
\begin{aligned}
p_1 &= 2x_1 - \\
p_2 &= 2x_2 - \\
p_3 &= x_{28} + x_3 \\
p_4 &= 2x_4 - x_1 \\
p_5 &= 2x_5 - x_2 \\
p_6 &= 2x_6 - x_3 \\
p_7 &= 2x_7 - x_1 - \\
p_8 &= 2x_8 - x_2 \\
p_9 &= 2x_9 - x_3 \\
p_{10} &= 2x_{10} - x_1 - \\
p_{11} &= 2x_{11} - x_2 - \\
p_{12} &= 2x_{12} - x_3 \\
p_{13} &= 2x_{13} - x_1 \\
p_{14} &= 2x_{14} - x_2 - \\
p_{15} &= 2x_{15} - x_3 \\
p_{16} &= x_{16} - x_{12}x_8 + x_{12}x_5 + x_{11}x_9 - x_{11}x_6 - x_9x_5 + x_8x_6 \\
p_{17} &= x_{17} + x_{12}x_7 - x_{12}x_4 - x_{10}x_9 + x_{10}x_6 + x_9x_4 - x_7x_6 \\
p_{18} &= x_{18} - x_{11}x_7 + x_{11}x_4 + x_{10}x_8 - x_{10}x_5 - x_8x_4 + x_7x_5 \\
p_{19} &= x_{19} + x_{18}x_6 + x_{17}x_5 + x_{16}x_4 \\
p_{20} &= -x_{20}x_{18}^2x_{16} - x_{20}x_{17}^2x_{16} - x_{20}x_{16}^3 - x_{19}x_{16}^2 + \\
&\quad x_{18}^2x_{16}x_1 - x_{18}x_{16}^2x_3 + x_{17}^2x_{16}x_1 - x_{17}x_{16}^2x_2 \\
p_{21} &= -x_{21}x_{16} + x_{20}x_{17} - x_{17}x_1 + x_{16}x_2 \\
p_{22} &= x_{22}x_{18} + x_{21}x_{17} + x_{20}x_{16} + x_{19} \\
p_{23} &= -x_{23}x_{16} + x_{20} - x_1 \\
p_{24} &= x_{24} - \\
p_{25} &= x_{25} - x_1 \\
p_{26} &= x_{26} - x_2 \\
p_{27} &= -x_{28}x_{24} + x_{27} - x_3
\end{aligned}
$$

2 Final Remainder

2.1 Final remainder for conjecture geothm_zadatak

Calculating final remainder of the conclusion:

$$\begin{aligned} g &= -x_{27}^2 + 2x_{27}x_3 - x_{26}^2 + 2x_{26}x_2 - x_{25}^2 + 2x_{25}x_1 + 4x_{22}^2 \\ &\quad -8x_{22}x_3 + 4x_{21}^2 - 8x_{21}x_2 + 4x_{20}^2 - 8x_{20}x_1 + 3x_3^2 + 3x_2^2 + \\ &\quad 3x_1^2 \end{aligned}$$

with respect to the triangular system.

1. Pseudo remainder with p_{27} over variable x_{27}:

$$\begin{aligned} g &= -x_{28}^2x_{24}^2 - x_{26}^2 + 2x_{26}x_2 - x_{25}^2 + 2x_{25}x_1 + 4x_{22}^2 \\ &\quad -8x_{22}x_3 + 4x_{21}^2 - 8x_{21}x_2 + 4x_{20}^2 - 8x_{20}x_1 + 4x_3^2 + 3x_2^2 + \\ &\quad 3x_1^2 \end{aligned}$$

2. Pseudo remainder with p_{26} over variable x_{26}:

$$\begin{aligned} g &= -x_{28}^2x_{24}^2 - x_{25}^2 + 2x_{25}x_1 + 4x_{22}^2 - 8x_{22}x_3 + 4x_{21}^2 \\ &\quad -8x_{21}x_2 + 4x_{20}^2 - 8x_{20}x_1 + 4x_3^2 + 4x_2^2 + 3x_1^2 \end{aligned}$$

3. Pseudo remainder with p_{25} over variable x_{25}:

$$\begin{aligned} g &= -x_{28}^2x_{24}^2 + 4x_{22}^2 - 8x_{22}x_3 + 4x_{21}^2 - 8x_{21}x_2 + 4x_{20}^2 \\ &\quad -8x_{20}x_1 + 4x_3^2 + 4x_2^2 + 4x_1^2 \end{aligned}$$

4. Pseudo remainder with p_{24} over variable x_{24}:

$$\begin{aligned} g &= -x_{28}^2 + 4x_{22}^2 - 8x_{22}x_3 + 4x_{21}^2 - 8x_{21}x_2 + 4x_{20}^2 - 8x_{20}x_1 + \\ &\quad 4x_3^2 + 4x_2^2 + 4x_1^2 \end{aligned}$$

5. Pseudo remainder with p_{23} over variable x_{23}:

$$\begin{aligned} g &= -x_{28}^2 + 4x_{22}^2 - 8x_{22}x_3 + 4x_{21}^2 - 8x_{21}x_2 + 4x_{20}^2 - 8x_{20}x_1 + \\ &\quad 4x_3^2 + 4x_2^2 + 4x_1^2 \end{aligned}$$

6. Pseudo remainder with p_{22} over variable x_{22}:

$$\begin{aligned} g &= -x_{28}^2x_{18}^2 + 4x_{21}^2x_{18}^2 + 4x_{21}^2x_{17}^2 + 8x_{21}x_{20}x_{17}x_{16} + \\ &\quad 8x_{21}x_{19}x_{17} - 8x_{21}x_{18}^2x_2 + 8x_{21}x_{18}x_{17}x_3 + 4x_{20}^2x_{18}^2 + \\ &\quad 4x_{20}^2x_{16}^2 + 8x_{20}x_{19}x_{16} - 8x_{20}x_{18}^2x_1 + 8x_{20}x_{18}x_{16}x_3 + \\ &\quad 4x_{19}^2 + 8x_{19}x_{18}x_3 + 4x_{18}^2x_3^2 + 4x_{18}^2x_2^2 + 4x_{18}^2x_1^2 \end{aligned}$$

7. Pseudo remainder with p_{21} over variable x_{21}:

$$\begin{aligned} g \;=\; & -x_{28}^2x_{18}^2x_{16}^2 + 4x_{20}^2x_{18}^2x_{17}^2 + \\ & 4x_{20}^2x_{18}^2x_{16}^2 + 4x_{20}^2x_{17}^4 + 8x_{20}^2x_{17}^2x_{16}^2 + \\ & 4x_{20}^2x_{16}^4 + 8x_{20}x_{19}x_{17}^2x_{16} + 8x_{20}x_{19}x_{16}^3 \\ & -8x_{20}x_{18}^2x_{17}^2x_1 - 8x_{20}x_{18}^2x_{16}^2x_1 + \\ & 8x_{20}x_{18}x_{17}^2x_{16}x_3 + 8x_{20}x_{18}x_{16}^3x_3 - 8x_{20}x_{17}^4x_1 + \\ & 8x_{20}x_{17}^3x_{16}x_2 - 8x_{20}x_{17}^2x_{16}^2x_1 + 8x_{20}x_{17}x_{16}^3x_2 + \\ & 4x_{19}^2x_{16}^2 + 8x_{19}x_{18}x_{16}^2x_3 - 8x_{19}x_{17}^2x_{16}x_1 + \\ & 8x_{19}x_{17}x_{16}^2x_2 + 4x_{18}^2x_{17}^2x_1^2 + 4x_{18}^2x_{16}^2x_3^2 + \\ & 4x_{18}^2x_{16}^2x_1^2 - 8x_{18}x_{17}^2x_{16}x_3x_1 + \\ & 8x_{18}x_{17}x_{16}^2x_3x_2 + 4x_{17}^4x_1^2 - 8x_{17}^3x_{16}x_2x_1 + \\ & 4x_{17}^2x_{16}^2x_2^2 \end{aligned}$$

8. Pseudo remainder with p_{20} over variable x_{20}:

$$\begin{aligned} g \;=\; & -x_{28}^2x_{18}^6x_{16}^4 - 2x_{28}^2x_{18}^4x_{17}^2x_{16}^4 \\ & -2x_{28}^2x_{18}^4x_{16}^6 - x_{28}^2x_{18}^2x_{17}^4x_{16}^4 \\ & -2x_{28}^2x_{18}^2x_{17}^2x_{16}^6 - x_{28}^2x_{18}^2x_{16}^8 + \\ & 4x_{19}^2x_{18}^4x_{16}^4 + 4x_{19}^2x_{18}^2x_{17}^2x_{16}^4 + \\ & 4x_{19}^2x_{18}^2x_{16}^6 + 8x_{19}x_{18}^5x_{16}^4x_3 + \\ & 8x_{19}x_{18}^4x_{17}x_{16}^4x_2 + 8x_{19}x_{18}^4x_{16}^5x_1 + \\ & 8x_{19}x_{18}^3x_{17}^2x_{16}^4x_3 + 8x_{19}x_{18}^3x_{16}^6x_3 + \\ & 8x_{19}x_{18}^2x_{17}^3x_{16}^4x_2 + 8x_{19}x_{18}^2x_{17}^2x_{16}^5x_1 + \\ & 8x_{19}x_{18}^2x_{17}x_{16}^6x_2 + 8x_{19}x_{18}^2x_{16}^7x_1 + \\ & 4x_{18}^6x_{16}^4x_3^2 + 8x_{18}^5x_{17}x_{16}^4x_3x_2 + \\ & 8x_{18}^5x_{16}^5x_3x_1 + 4x_{18}^4x_{17}^2x_{16}^4x_3^2 + \\ & 4x_{18}^4x_{17}^2x_{16}^4x_2^2 + 8x_{18}^4x_{17}x_{16}^5x_2x_1 + \\ & 4x_{18}^4x_{16}^6x_3^2 + 4x_{18}^4x_{16}^6x_1^2 + \\ & 8x_{18}^3x_{17}^3x_{16}^4x_3x_2 + 8x_{18}^3x_{17}^2x_{16}^5x_3x_1 + \\ & 8x_{18}^3x_{17}x_{16}^6x_3x_2 + 8x_{18}^3x_{16}^7x_3x_1 + \\ & 4x_{18}^2x_{17}^4x_{16}^4x_2^2 + 8x_{18}^2x_{17}^3x_{16}^5x_2x_1 + \\ & 4x_{18}^2x_{17}^2x_{16}^6x_2^2 + 4x_{18}^2x_{17}^2x_{16}^6x_1^2 + \\ & 8x_{18}^2x_{17}x_{16}^7x_2x_1 + 4x_{18}^2x_{16}^8x_1^2 \end{aligned}$$

9. Pseudo remainder with p_{19} over variable x_{19}:

   Polynomial too big for output (text size is 2723 *characters, number of terms is* 69*)*

10. Pseudo remainder with p_{18} over variable x_{18}:

3 Prover results

Status: Proving failed - Space limit has been reached.

Space Complexity: The biggest polynomial obtained during prover execution contains 3294 terms.

Time Complexity: Time spent by the prover is 0.315 seconds.