OpenGeoProver Output for conjecture "geothm_zadatak"

Wu's method used

October 1, 2016

1 Invoking the theorem prover

The used proving method is Wu's method.

The input system is:

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

$$
\begin{aligned}
p_{26} &= x_{25}x_{21} + x_{24}x_{20} + x_{23}x_{19} + x_{22} \\
p_{27} &= -x_{30}x_{16} + x_{27} - \\
p_{28} &= -x_{30}x_{17} + x_{28} \\
p_{29} &= -x_{30}x_{18} + x_{29} \\
p_{30} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22}
\end{aligned}
$$

1.1 Triangulation, step 1

Choosing variable: Trying the variable with index 30.

Variable x_{30} selected: The number of polynomials with this variable, with indexes from 1 to 30, is 3.

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

Polynomial with linear degree: Removing variable x_{30} from all other polynomials by reducing them with polynomial p_{27} from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_{1} &= -x_{3} + x_{1} \\
p_{2} &= -x_{3} + x_{2} \\
p_{3} &= x_{4} + x_{1} - \\
p_{4} &= -x_{4} + x_{2} \\
p_{5} &= -x_{8} + x_{5} \\
p_{6} &= -x_{8} + x_{6} \\
p_{7} &= x_{9} + x_{5} - \\
p_{8} &= -x_{9} + x_{6} \\
p_{9} &= x_{7} - \\
p_{10} &= 3x_{10} - 2x_{5} - x_{1} \\
p_{11} &= 3x_{11} - 2x_{6} - x_{2} \\
p_{12} &= 3x_{12} - 2x_{7} \\
p_{13} &= x_{13} + x_{10} \\
p_{14} &= x_{14} + x_{11} \\
p_{15} &= x_{15} + x_{12} \\
p_{16} &= x_{16} + x_{10} - \\
p_{17} &= x_{17} + x_{11} \\
p_{18} &= x_{18} + x_{12} \\
p_{19} &= x_{19} \\
p_{20} &= x_{20} \\
p_{21} &= x_{21} - \\
p_{22} &= x_{22} + x_{21} \\
p_{23} &= -x_{26}x_{13} + x_{23} \\
p_{24} &= -x_{26}x_{14} + x_{24}
\end{aligned}
$$

$$
\begin{aligned}
p_{25} &= -x_{26}x_{15} + x_{25} \\
p_{26} &= x_{25}x_{21} + x_{24}x_{20} + x_{23}x_{19} + x_{22} \\
p_{27} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22} \\
p_{28} &= -x_{28}x_{16} + x_{27}x_{17} - x_{17} \\
p_{29} &= -x_{29}x_{16} + x_{27}x_{18} - x_{18} \\
p_{30} &= -x_{30}x_{16} + x_{27}-
\end{aligned}
$$

1.2 Triangulation, step 2

Choosing variable: Trying the variable with index 29.

Variable x_{29} selected: The number of polynomials with this variable, with indexes from 1 to 29, is 2.

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

Polynomial with linear degree: Removing variable x_{29} from all other polynomials by reducing them with polynomial p_{27} from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_{1} &= -x_{3} + x_{1} \\
p_{2} &= -x_{3} + x_{2} \\
p_{3} &= x_{4} + x_{1} - \\
p_{4} &= -x_{4} + x_{2} \\
p_{5} &= -x_{8} + x_{5} \\
p_{6} &= -x_{8} + x_{6} \\
p_{7} &= x_{9} + x_{5} - \\
p_{8} &= -x_{9} + x_{6} \\
p_{9} &= x_{7} - \\
p_{10} &= 3x_{10} - 2x_{5} - x_{1} \\
p_{11} &= 3x_{11} - 2x_{6} - x_{2} \\
p_{12} &= 3x_{12} - 2x_{7} \\
p_{13} &= x_{13} + x_{10} \\
p_{14} &= x_{14} + x_{11} \\
p_{15} &= x_{15} + x_{12} \\
p_{16} &= x_{16} + x_{10} - \\
p_{17} &= x_{17} + x_{11} \\
p_{18} &= x_{18} + x_{12} \\
p_{19} &= x_{19} \\
p_{20} &= x_{20} \\
p_{21} &= x_{21} - \\
p_{22} &= x_{22} + x_{21} \\
p_{23} &= -x_{26}x_{13} + x_{23}
\end{aligned}
$$

$$
\begin{aligned}
p_{24} &= -x_{26}x_{14} + x_{24} \\
p_{25} &= -x_{26}x_{15} + x_{25} \\
p_{26} &= x_{25}x_{21} + x_{24}x_{20} + x_{23}x_{19} + x_{22} \\
p_{27} &= -x_{28}x_{16} + x_{27}x_{17} - x_{17} \\
p_{28} &= x_{28}x_{20}x_{16} + x_{27}x_{21}x_{18} + x_{27}x_{19}x_{16} + x_{22}x_{16} - x_{21}x_{18} \\
p_{29} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22} \\
p_{30} &= -x_{30}x_{16} + x_{27}-
\end{aligned}
$$

1.3 Triangulation, step 3

Choosing variable: Trying the variable with index 28.

Variable x_{28} selected: The number of polynomials with this variable, with indexes from 1 to 28, is 2.

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

Polynomial with linear degree: Removing variable x_{28} from all other polynomials by reducing them with polynomial p_{27} from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_{1} &= -x_{3} + x_{1} \\
p_{2} &= -x_{3} + x_{2} \\
p_{3} &= x_{4} + x_{1} - \\
p_{4} &= -x_{4} + x_{2} \\
p_{5} &= -x_{8} + x_{5} \\
p_{6} &= -x_{8} + x_{6} \\
p_{7} &= x_{9} + x_{5} - \\
p_{8} &= -x_{9} + x_{6} \\
p_{9} &= x_{7} - \\
p_{10} &= 3x_{10} - 2x_{5} - x_{1} \\
p_{11} &= 3x_{11} - 2x_{6} - x_{2} \\
p_{12} &= 3x_{12} - 2x_{7} \\
p_{13} &= x_{13} + x_{10} \\
p_{14} &= x_{14} + x_{11} \\
p_{15} &= x_{15} + x_{12} \\
p_{16} &= x_{16} + x_{10} - \\
p_{17} &= x_{17} + x_{11} \\
p_{18} &= x_{18} + x_{12} \\
p_{19} &= x_{19} \\
p_{20} &= x_{20} \\
p_{21} &= x_{21} - \\
p_{22} &= x_{22} + x_{21}
\end{aligned}
$$

$$
\begin{aligned}
p_{23} &= -x_{26}x_{13} + x_{23} \\
p_{24} &= -x_{26}x_{14} + x_{24} \\
p_{25} &= -x_{26}x_{15} + x_{25} \\
p_{26} &= x_{25}x_{21} + x_{24}x_{20} + x_{23}x_{19} + x_{22} \\
p_{27} &= -x_{27}x_{21}x_{18}x_{16} - x_{27}x_{20}x_{17}x_{16} - x_{27}x_{19}x_{16}^2 - x_{22}x_{16}^2 + \\
&\quad x_{21}x_{18}x_{16} + x_{20}x_{17}x_{16} \\
p_{28} &= -x_{28}x_{16} + x_{27}x_{17} - x_{17} \\
p_{29} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22} \\
p_{30} &= -x_{30}x_{16} + x_{27} -
\end{aligned}
$$

1.4 Triangulation, step 4

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 1.

Single polynomial with chosen variable: Chosen polynomial is p_{27}. No reduction needed.

The triangular system has not been changed.

1.5 Triangulation, step 5

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 3.

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

Polynomial with linear degree: Removing variable x_{26} from all other polynomials by reducing them with polynomial p_{23} from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_1 &= -x_3 + x_1 \\
p_2 &= -x_3 + x_2 \\
p_3 &= x_4 + x_1 - \\
p_4 &= -x_4 + x_2 \\
p_5 &= -x_8 + x_5 \\
p_6 &= -x_8 + x_6 \\
p_7 &= x_9 + x_5 - \\
p_8 &= -x_9 + x_6 \\
p_9 &= x_7 - \\
p_{10} &= 3x_{10} - 2x_5 - x_1 \\
p_{11} &= 3x_{11} - 2x_6 - x_2
\end{aligned}
$$

$$
\begin{aligned}
p_{12} &= 3x_{12} - 2x_7 \\
p_{13} &= x_{13} + x_{10} \\
p_{14} &= x_{14} + x_{11} \\
p_{15} &= x_{15} + x_{12} \\
p_{16} &= x_{16} + x_{10} - \\
p_{17} &= x_{17} + x_{11} \\
p_{18} &= x_{18} + x_{12} \\
p_{19} &= x_{19} \\
p_{20} &= x_{20} \\
p_{21} &= x_{21} - \\
p_{22} &= x_{22} + x_{21} \\
p_{23} &= x_{25}x_{21} + x_{24}x_{20} + x_{23}x_{19} + x_{22} \\
p_{24} &= -x_{24}x_{13} + x_{23}x_{14} \\
p_{25} &= -x_{25}x_{13} + x_{23}x_{15} \\
p_{26} &= -x_{26}x_{13} + x_{23} \\
p_{27} &= -x_{27}x_{21}x_{18}x_{16} - x_{27}x_{20}x_{17}x_{16} - x_{27}x_{19}x_{16}^2 - x_{22}x_{16}^2 + \\
&\quad x_{21}x_{18}x_{16} + x_{20}x_{17}x_{16} \\
p_{28} &= -x_{28}x_{16} + x_{27}x_{17} - x_{17} \\
p_{29} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22} \\
p_{30} &= -x_{30}x_{16} + x_{27} -
\end{aligned}
$$

1.6 Triangulation, step 6

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 2.

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

Polynomial with linear degree: Removing variable x_{25} from all other polynomials by reducing them with polynomial p_{23} from previous step.

Finished a triangulation step, the current system is:

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

$$
\begin{aligned}
p_{10} &= 3x_{10} - 2x_5 - x_1 \\
p_{11} &= 3x_{11} - 2x_6 - x_2 \\
p_{12} &= 3x_{12} - 2x_7 \\
p_{13} &= x_{13} + x_{10} \\
p_{14} &= x_{14} + x_{11} \\
p_{15} &= x_{15} + x_{12} \\
p_{16} &= x_{16} + x_{10} - \\
p_{17} &= x_{17} + x_{11} \\
p_{18} &= x_{18} + x_{12} \\
p_{19} &= x_{19} \\
p_{20} &= x_{20} \\
p_{21} &= x_{21} - \\
p_{22} &= x_{22} + x_{21} \\
p_{23} &= -x_{24}x_{13} + x_{23}x_{14} \\
p_{24} &= x_{24}x_{20}x_{13} + x_{23}x_{21}x_{15} + x_{23}x_{19}x_{13} + x_{22}x_{13} \\
p_{25} &= x_{25}x_{21} + x_{24}x_{20} + x_{23}x_{19} + x_{22} \\
p_{26} &= -x_{26}x_{13} + x_{23} \\
p_{27} &= -x_{27}x_{21}x_{18}x_{16} - x_{27}x_{20}x_{17}x_{16} - x_{27}x_{19}x_{16}^2 - x_{22}x_{16}^2 + \\
&\quad x_{21}x_{18}x_{16} + x_{20}x_{17}x_{16} \\
p_{28} &= -x_{28}x_{16} + x_{27}x_{17} - x_{17} \\
p_{29} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22} \\
p_{30} &= -x_{30}x_{16} + x_{27} -
\end{aligned}
$$

1.7 Triangulation, step 7

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: 2 polynomial(s) with degree 1.

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:

$$
\begin{aligned}
p_1 &= -x_3 + x_1 \\
p_2 &= -x_3 + x_2 \\
p_3 &= x_4 + x_1 - \\
p_4 &= -x_4 + x_2 \\
p_5 &= -x_8 + x_5 \\
p_6 &= -x_8 + x_6 \\
p_7 &= x_9 + x_5 -
\end{aligned}
$$

$$
\begin{aligned}
p_8 &= -x_9 + x_6 \\
p_9 &= x_7 - \\
p_{10} &= 3x_{10} - 2x_5 - x_1 \\
p_{11} &= 3x_{11} - 2x_6 - x_2 \\
p_{12} &= 3x_{12} - 2x_7 \\
p_{13} &= x_{13} + x_{10} \\
p_{14} &= x_{14} + x_{11} \\
p_{15} &= x_{15} + x_{12} \\
p_{16} &= x_{16} + x_{10} - \\
p_{17} &= x_{17} + x_{11} \\
p_{18} &= x_{18} + x_{12} \\
p_{19} &= x_{19} \\
p_{20} &= x_{20} \\
p_{21} &= x_{21} - \\
p_{22} &= x_{22} + x_{21} \\
p_{23} &= -x_{23}x_{21}x_{15}x_{13} - x_{23}x_{20}x_{14}x_{13} - x_{23}x_{19}x_{13}^2 - x_{22}x_{13}^2 \\
p_{24} &= -x_{24}x_{13} + x_{23}x_{14} \\
p_{25} &= x_{25}x_{21} + x_{24}x_{20} + x_{23}x_{19} + x_{22} \\
p_{26} &= -x_{26}x_{13} + x_{23} \\
p_{27} &= -x_{27}x_{21}x_{18}x_{16} - x_{27}x_{20}x_{17}x_{16} - x_{27}x_{19}x_{16}^2 - x_{22}x_{16}^2 + \\
&\quad x_{21}x_{18}x_{16} + x_{20}x_{17}x_{16} \\
p_{28} &= -x_{28}x_{16} + x_{27}x_{17} - x_{17} \\
p_{29} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22} \\
p_{30} &= -x_{30}x_{16} + x_{27} -
\end{aligned}
$$

1.8 Triangulation, step 8

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 1.

Single polynomial with chosen variable: Chosen polynomial is p_{23}. No reduction needed.

The triangular system has not been changed.

1.9 Triangulation, step 9

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 1.

Single polynomial with chosen variable: Chosen polynomial is p_{22}. No reduction needed.

The triangular system has not been changed.

1.10 Triangulation, step 10

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 1.

Single polynomial with chosen variable: Chosen polynomial is p_{21}. No reduction needed.

The triangular system has not been changed.

1.11 Triangulation, step 11

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.

1.12 Triangulation, step 12

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_{19}. No reduction needed.

The triangular system has not been changed.

1.13 Triangulation, step 13

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_{18}. No reduction needed.

The triangular system has not been changed.

1.14 Triangulation, step 14

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_{17}. No reduction needed.

The triangular system has not been changed.

1.15 Triangulation, step 15

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_{16}. No reduction needed.

The triangular system has not been changed.

1.16 Triangulation, step 16

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_{15}. No reduction needed.

The triangular system has not been changed.

1.17 Triangulation, step 17

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_{14}. No reduction needed.

The triangular system has not been changed.

1.18 Triangulation, step 18

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_{13}. No reduction needed.

The triangular system has not been changed.

1.19 Triangulation, step 19

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_{12}. No reduction needed.

The triangular system has not been changed.

1.20 Triangulation, step 20

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_{11}. No reduction needed.

The triangular system has not been changed.

1.21 Triangulation, step 21

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_{10}. No reduction needed.

The triangular system has not been changed.

1.22 Triangulation, step 22

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 2.

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

Polynomial with linear degree: Removing variable x_9 from all other polynomials by reducing them with polynomial p_7 from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_1 &= -x_3 + x_1 \\
p_2 &= -x_3 + x_2 \\
p_3 &= x_4 + x_1 - \\
p_4 &= -x_4 + x_2 \\
p_5 &= -x_8 + x_5 \\
p_6 &= -x_8 + x_6 \\
p_7 &= x_7 - \\
p_8 &= x_6 + x_5 - \\
p_9 &= x_9 + x_5 - \\
p_{10} &= 3x_{10} - 2x_5 - x_1 \\
p_{11} &= 3x_{11} - 2x_6 - x_2 \\
p_{12} &= 3x_{12} - 2x_7 \\
p_{13} &= x_{13} + x_{10} \\
p_{14} &= x_{14} + x_{11} \\
p_{15} &= x_{15} + x_{12} \\
p_{16} &= x_{16} + x_{10} - \\
p_{17} &= x_{17} + x_{11} \\
p_{18} &= x_{18} + x_{12} \\
p_{19} &= x_{19} \\
p_{20} &= x_{20} \\
p_{21} &= x_{21} - \\
p_{22} &= x_{22} + x_{21} \\
p_{23} &= -x_{23}x_{21}x_{15}x_{13} - x_{23}x_{20}x_{14}x_{13} - x_{23}x_{19}x_{13}^2 - x_{22}x_{13}^2 \\
p_{24} &= -x_{24}x_{13} + x_{23}x_{14} \\
p_{25} &= x_{25}x_{21} + x_{24}x_{20} + x_{23}x_{19} + x_{22} \\
p_{26} &= -x_{26}x_{13} + x_{23} \\
p_{27} &= -x_{27}x_{21}x_{18}x_{16} - x_{27}x_{20}x_{17}x_{16} - x_{27}x_{19}x_{16}^2 - x_{22}x_{16}^2 + \\
&\quad x_{21}x_{18}x_{16} + x_{20}x_{17}x_{16} \\
p_{28} &= -x_{28}x_{16} + x_{27}x_{17} - x_{17} \\
p_{29} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22}
\end{aligned}
$$

$$p_{30} = -x_{30}x_{16} + x_{27} -$$

1.23 Triangulation, step 23

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 2.

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

Polynomial with linear degree: Removing variable x_8 from all other polynomials by reducing them with polynomial p_5 from previous step.

Finished a triangulation step, the current system is:

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

$$
\begin{aligned}
p_{28} &= -x_{28}x_{16} + x_{27}x_{17} - x_{17} \\
p_{29} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22} \\
p_{30} &= -x_{30}x_{16} + x_{27}-
\end{aligned}
$$

1.24 Triangulation, step 24

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_5. No reduction needed.

The triangular system has not been changed.

1.25 Triangulation, step 25

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 2.

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

Polynomial with linear degree: Removing variable x_6 from all other polynomials by reducing them with polynomial p_5 from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_{1} &= -x_{3} + x_{1} \\
p_{2} &= -x_{3} + x_{2} \\
p_{3} &= x_{4} + x_{1} - \\
p_{4} &= -x_{4} + x_{2} \\
p_{5} &= 2x_{5} - \\
p_{6} &= x_{6} + x_{5} - \\
p_{7} &= x_{7} - \\
p_{8} &= -x_{8} + x_{5} \\
p_{9} &= x_{9} + x_{5} - \\
p_{10} &= 3x_{10} - 2x_{5} - x_{1} \\
p_{11} &= 3x_{11} - 2x_{6} - x_{2} \\
p_{12} &= 3x_{12} - 2x_{7} \\
p_{13} &= x_{13} + x_{10} \\
p_{14} &= x_{14} + x_{11} \\
p_{15} &= x_{15} + x_{12} \\
p_{16} &= x_{16} + x_{10} - \\
p_{17} &= x_{17} + x_{11}
\end{aligned}
$$

$$
\begin{aligned}
p_{18} &= x_{18} + x_{12} \\
p_{19} &= x_{19} \\
p_{20} &= x_{20} \\
p_{21} &= x_{21} - \\
p_{22} &= x_{22} + x_{21} \\
p_{23} &= -x_{23}x_{21}x_{15}x_{13} - x_{23}x_{20}x_{14}x_{13} - x_{23}x_{19}x_{13}^2 - x_{22}x_{13}^2 \\
p_{24} &= -x_{24}x_{13} + x_{23}x_{14} \\
p_{25} &= x_{25}x_{21} + x_{24}x_{20} + x_{23}x_{19} + x_{22} \\
p_{26} &= -x_{26}x_{13} + x_{23} \\
p_{27} &= -x_{27}x_{21}x_{18}x_{16} - x_{27}x_{20}x_{17}x_{16} - x_{27}x_{19}x_{16}^2 - x_{22}x_{16}^2 + \\
&\quad x_{21}x_{18}x_{16} + x_{20}x_{17}x_{16} \\
p_{28} &= -x_{28}x_{16} + x_{27}x_{17} - x_{17} \\
p_{29} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22} \\
p_{30} &= -x_{30}x_{16} + x_{27} -
\end{aligned}
$$

1.26 Triangulation, step 26

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_5. No reduction needed.

The triangular system has not been changed.

1.27 Triangulation, step 27

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 2.

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

Polynomial with linear degree: Removing variable x_4 from all other polynomials by reducing them with polynomial p_3 from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_1 &= -x_3 + x_1 \\
p_2 &= -x_3 + x_2 \\
p_3 &= x_2 + x_1 - \\
p_4 &= x_4 + x_1 - \\
p_5 &= 2x_5 - \\
p_6 &= x_6 + x_5 -
\end{aligned}
$$

$$
\begin{aligned}
p_7 &= x_7 - \\
p_8 &= -x_8 + x_5 \\
p_9 &= x_9 + x_5 - \\
p_{10} &= 3x_{10} - 2x_5 - x_1 \\
p_{11} &= 3x_{11} - 2x_6 - x_2 \\
p_{12} &= 3x_{12} - 2x_7 \\
p_{13} &= x_{13} + x_{10} \\
p_{14} &= x_{14} + x_{11} \\
p_{15} &= x_{15} + x_{12} \\
p_{16} &= x_{16} + x_{10} - \\
p_{17} &= x_{17} + x_{11} \\
p_{18} &= x_{18} + x_{12} \\
p_{19} &= x_{19} \\
p_{20} &= x_{20} \\
p_{21} &= x_{21} - \\
p_{22} &= x_{22} + x_{21} \\
p_{23} &= -x_{23}x_{21}x_{15}x_{13} - x_{23}x_{20}x_{14}x_{13} - x_{23}x_{19}x_{13}^2 - x_{22}x_{13}^2 \\
p_{24} &= -x_{24}x_{13} + x_{23}x_{14} \\
p_{25} &= x_{25}x_{21} + x_{24}x_{20} + x_{23}x_{19} + x_{22} \\
p_{26} &= -x_{26}x_{13} + x_{23} \\
p_{27} &= -x_{27}x_{21}x_{18}x_{16} - x_{27}x_{20}x_{17}x_{16} - x_{27}x_{19}x_{16}^2 - x_{22}x_{16}^2 + \\
&\quad x_{21}x_{18}x_{16} + x_{20}x_{17}x_{16} \\
p_{28} &= -x_{28}x_{16} + x_{27}x_{17} - x_{17} \\
p_{29} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22} \\
p_{30} &= -x_{30}x_{16} + x_{27} -
\end{aligned}
$$

1.28 Triangulation, step 28

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 2.

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

Polynomial with linear degree: Removing variable x_3 from all other polynomials by reducing them with polynomial p_1 from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_1 &= x_2 + x_1 - \\
p_2 &= -x_2 + x_1 \\
p_3 &= -x_3 + x_1 \\
p_4 &= x_4 + x_1 -
\end{aligned}
$$

$$
\begin{aligned}
p_5 &= 2x_5 - \\
p_6 &= x_6 + x_5 - \\
p_7 &= x_7 - \\
p_8 &= -x_8 + x_5 \\
p_9 &= x_9 + x_5 - \\
p_{10} &= 3x_{10} - 2x_5 - x_1 \\
p_{11} &= 3x_{11} - 2x_6 - x_2 \\
p_{12} &= 3x_{12} - 2x_7 \\
p_{13} &= x_{13} + x_{10} \\
p_{14} &= x_{14} + x_{11} \\
p_{15} &= x_{15} + x_{12} \\
p_{16} &= x_{16} + x_{10} - \\
p_{17} &= x_{17} + x_{11} \\
p_{18} &= x_{18} + x_{12} \\
p_{19} &= x_{19} \\
p_{20} &= x_{20} \\
p_{21} &= x_{21} - \\
p_{22} &= x_{22} + x_{21} \\
p_{23} &= -x_{23}x_{21}x_{15}x_{13} - x_{23}x_{20}x_{14}x_{13} - x_{23}x_{19}x_{13}^2 - x_{22}x_{13}^2 \\
p_{24} &= -x_{24}x_{13} + x_{23}x_{14} \\
p_{25} &= x_{25}x_{21} + x_{24}x_{20} + x_{23}x_{19} + x_{22} \\
p_{26} &= -x_{26}x_{13} + x_{23} \\
p_{27} &= -x_{27}x_{21}x_{18}x_{16} - x_{27}x_{20}x_{17}x_{16} - x_{27}x_{19}x_{16}^2 - x_{22}x_{16}^2 + \\
&\quad x_{21}x_{18}x_{16} + x_{20}x_{17}x_{16} \\
p_{28} &= -x_{28}x_{16} + x_{27}x_{17} - x_{17} \\
p_{29} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22} \\
p_{30} &= -x_{30}x_{16} + x_{27} -
\end{aligned}
$$

1.29 Triangulation, step 29

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 2.

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

Polynomial with linear degree: Removing variable x_2 from all other polynomials by reducing them with polynomial p_1 from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_1 &= 2x_1 - \\
p_2 &= x_2 + x_1 -
\end{aligned}
$$

$$
\begin{aligned}
p_3 &= -x_3 + x_1 \\
p_4 &= x_4 + x_1 - \\
p_5 &= 2x_5 - \\
p_6 &= x_6 + x_5 - \\
p_7 &= x_7 - \\
p_8 &= -x_8 + x_5 \\
p_9 &= x_9 + x_5 - \\
p_{10} &= 3x_{10} - 2x_5 - x_1 \\
p_{11} &= 3x_{11} - 2x_6 - x_2 \\
p_{12} &= 3x_{12} - 2x_7 \\
p_{13} &= x_{13} + x_{10} \\
p_{14} &= x_{14} + x_{11} \\
p_{15} &= x_{15} + x_{12} \\
p_{16} &= x_{16} + x_{10} - \\
p_{17} &= x_{17} + x_{11} \\
p_{18} &= x_{18} + x_{12} \\
p_{19} &= x_{19} \\
p_{20} &= x_{20} \\
p_{21} &= x_{21} - \\
p_{22} &= x_{22} + x_{21} \\
p_{23} &= -x_{23}x_{21}x_{15}x_{13} - x_{23}x_{20}x_{14}x_{13} - x_{23}x_{19}x_{13}^2 - x_{22}x_{13}^2 \\
p_{24} &= -x_{24}x_{13} + x_{23}x_{14} \\
p_{25} &= x_{25}x_{21} + x_{24}x_{20} + x_{23}x_{19} + x_{22} \\
p_{26} &= -x_{26}x_{13} + x_{23} \\
p_{27} &= -x_{27}x_{21}x_{18}x_{16} - x_{27}x_{20}x_{17}x_{16} - x_{27}x_{19}x_{16}^2 - x_{22}x_{16}^2 + \\
&\quad x_{21}x_{18}x_{16} + x_{20}x_{17}x_{16} \\
p_{28} &= -x_{28}x_{16} + x_{27}x_{17} - x_{17} \\
p_{29} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22} \\
p_{30} &= -x_{30}x_{16} + x_{27} -
\end{aligned}
$$

1.30 Triangulation, step 30

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:

$$
\begin{aligned}
p_1 &= 2x_1 - \\
p_2 &= x_2 + x_1 - \\
p_3 &= -x_3 + x_1 \\
p_4 &= x_4 + x_1 - \\
p_5 &= 2x_5 - \\
p_6 &= x_6 + x_5 - \\
p_7 &= x_7 - \\
p_8 &= -x_8 + x_5 \\
p_9 &= x_9 + x_5 - \\
p_{10} &= 3x_{10} - 2x_5 - x_1 \\
p_{11} &= 3x_{11} - 2x_6 - x_2 \\
p_{12} &= 3x_{12} - 2x_7 \\
p_{13} &= x_{13} + x_{10} \\
p_{14} &= x_{14} + x_{11} \\
p_{15} &= x_{15} + x_{12} \\
p_{16} &= x_{16} + x_{10} - \\
p_{17} &= x_{17} + x_{11} \\
p_{18} &= x_{18} + x_{12} \\
p_{19} &= x_{19} \\
p_{20} &= x_{20} \\
p_{21} &= x_{21} - \\
p_{22} &= x_{22} + x_{21} \\
p_{23} &= -x_{23}x_{21}x_{15}x_{13} - x_{23}x_{20}x_{14}x_{13} - x_{23}x_{19}x_{13}^2 - x_{22}x_{13}^2 \\
p_{24} &= -x_{24}x_{13} + x_{23}x_{14} \\
p_{25} &= x_{25}x_{21} + x_{24}x_{20} + x_{23}x_{19} + x_{22} \\
p_{26} &= -x_{26}x_{13} + x_{23} \\
p_{27} &= -x_{27}x_{21}x_{18}x_{16} - x_{27}x_{20}x_{17}x_{16} - x_{27}x_{19}x_{16}^2 - x_{22}x_{16}^2 + \\
&\quad x_{21}x_{18}x_{16} + x_{20}x_{17}x_{16} \\
p_{28} &= -x_{28}x_{16} + x_{27}x_{17} - x_{17} \\
p_{29} &= x_{29}x_{21} + x_{28}x_{20} + x_{27}x_{19} + x_{22} \\
p_{30} &= -x_{30}x_{16} + x_{27} -
\end{aligned}
$$

2 Final Remainder

2.1 Final remainder for conjecture geothm_zadatak

Calculating final remainder of the conclusion:

$$
\begin{aligned}
g &= 4x_{29}^2 - 8x_{29}x_{25} + 4x_{28}^2 - 8x_{28}x_{24} + 4x_{27}^2 - 8x_{27}x_{23} + 4x_{25}^2 + \\
&\quad 4x_{24}^2 + 4x_{23}^2 -
\end{aligned}
$$

with respect to the triangular system.

1. Pseudo remainder with p_{30} over variable x_{30}:

$$\begin{aligned} g &= 4x_{29}^2 - 8x_{29}x_{25} + 4x_{28}^2 - 8x_{28}x_{24} + 4x_{27}^2 - 8x_{27}x_{23} + 4x_{25}^2 + \\ &\quad 4x_{24}^2 + 4x_{23}^2 - \end{aligned}$$

2. Pseudo remainder with p_{29} over variable x_{29}:

$$\begin{aligned} g &= 4x_{28}^2x_{21}^2 + 4x_{28}^2x_{20}^2 + 8x_{28}x_{27}x_{20}x_{19} + \\ &\quad 8x_{28}x_{25}x_{21}x_{20} - 8x_{28}x_{24}x_{21}^2 + 8x_{28}x_{22}x_{20} + 4x_{27}^2x_{21}^2 + \\ &\quad 4x_{27}^2x_{19}^2 + 8x_{27}x_{25}x_{21}x_{19} - 8x_{27}x_{23}x_{21}^2 + 8x_{27}x_{22}x_{19} + \\ &\quad 4x_{25}^2x_{21}^2 + 8x_{25}x_{22}x_{21} + 4x_{24}^2x_{21}^2 + 4x_{23}^2x_{21}^2 + \\ &\quad 4x_{22}^2 - x_{21}^2 \end{aligned}$$

3. Pseudo remainder with p_{28} over variable x_{28}:

$$\begin{aligned} g &= 4x_{27}^2x_{21}^2x_{17}^2 + 4x_{27}^2x_{21}^2x_{16}^2 + \\ &\quad 4x_{27}^2x_{20}^2x_{17}^2 + 8x_{27}^2x_{20}x_{19}x_{17}x_{16} + \\ &\quad 4x_{27}^2x_{19}^2x_{16}^2 + 8x_{27}x_{25}x_{21}x_{20}x_{17}x_{16} + \\ &\quad 8x_{27}x_{25}x_{21}x_{19}x_{16}^2 - 8x_{27}x_{24}x_{21}^2x_{17}x_{16} \\ &\quad -8x_{27}x_{23}x_{21}^2x_{16}^2 + 8x_{27}x_{22}x_{20}x_{17}x_{16} + \\ &\quad 8x_{27}x_{22}x_{19}x_{16}^2 - 8x_{27}x_{21}^2x_{17}^2 - 8x_{27}x_{20}^2x_{17}^2 \\ &\quad -8x_{27}x_{20}x_{19}x_{17}x_{16} + 4x_{25}^2x_{21}^2x_{16}^2 + \\ &\quad 8x_{25}x_{22}x_{21}x_{16}^2 - 8x_{25}x_{21}x_{20}x_{17}x_{16} + \\ &\quad 4x_{24}^2x_{21}^2x_{16}^2 + 8x_{24}x_{21}^2x_{17}x_{16} + \\ &\quad 4x_{23}^2x_{21}^2x_{16}^2 + 4x_{22}^2x_{16}^2 - 8x_{22}x_{20}x_{17}x_{16} + \\ &\quad 4x_{21}^2x_{17}^2 - x_{21}^2x_{16}^2 + 4x_{20}^2x_{17}^2 \end{aligned}$$

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

   Polynomial too big for output (text size is 2479 *characters, number of terms is* 53*)*

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

   Polynomial too big for output (text size is 2479 *characters, number of terms is* 53*)*

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

   Polynomial too big for output (text size is 3988 *characters, number of terms is* 78*)*

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

   Polynomial too big for output (text size is 4824 *characters, number of terms is* 78*)*

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

   Polynomial too big for output (text size is 7822 *characters, number of terms is* 119*)*

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

   Polynomial too big for output (text size is 6664 *characters, number of terms is* 109*)*

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

    Polynomial too big for output (text size is 5526 *characters, number of terms is* 109*)*

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

$$
\begin{aligned}
g \;=\;& 4x_{19}^4x_{18}^2x_{16}^4x_{13}^6 + 4x_{19}^4x_{17}^2x_{16}^4x_{13}^6 \\
& -x_{19}^4x_{16}^6x_{13}^6 + 8x_{19}^3x_{18}^2x_{16}^4x_{15}x_{13}^5 \\
& -8x_{19}^3x_{18}^2x_{16}^4x_{13}^6 + 8x_{19}^3x_{18}x_{16}^5x_{15}x_{13}^5 \\
& -2x_{19}^3x_{18}x_{16}^5x_{13}^6 + 8x_{19}^3x_{17}^2x_{16}^4x_{15}x_{13}^5 \\
& -8x_{19}^3x_{17}^2x_{16}^4x_{13}^6 + 8x_{19}^3x_{17}x_{16}^5x_{14}x_{13}^5 \\
& -2x_{19}^3x_{16}^6x_{15}x_{13}^5 + 4x_{19}^2x_{18}^2x_{16}^4x_{15}^2x_{13}^4 \\
& -8x_{19}^2x_{18}^2x_{16}^4x_{15}x_{13}^5 + 7x_{19}^2x_{18}^2x_{16}^4x_{13}^6 + \\
& 8x_{19}^2x_{18}x_{17}x_{16}^4x_{14}x_{13}^5 + \\
& 8x_{19}^2x_{18}x_{16}^5x_{15}^2x_{13}^4 \\
& -12x_{19}^2x_{18}x_{16}^5x_{15}x_{13}^5 + \\
& 4x_{19}^2x_{17}^2x_{16}^4x_{15}^2x_{13}^4 \\
& -16x_{19}^2x_{17}^2x_{16}^4x_{15}x_{13}^5 + 4x_{19}^2x_{17}^2x_{16}^4x_{13}^6 + \\
& 8x_{19}^2x_{17}x_{16}^5x_{15}x_{14}x_{13}^4 \\
& -8x_{19}^2x_{17}x_{16}^5x_{14}x_{13}^5 + 3x_{19}^2x_{16}^6x_{15}^2x_{13}^4 + \\
& 4x_{19}^2x_{16}^6x_{14}^2x_{13}^4 + 6x_{19}x_{18}^2x_{16}^4x_{15}x_{13}^5 \\
& -8x_{19}x_{18}^2x_{16}^4x_{13}^6 + 8x_{19}x_{18}x_{17}x_{16}^4x_{15}x_{14}x_{13}^4 \\
& -8x_{19}x_{18}x_{17}x_{16}^4x_{14}x_{13}^5 - 2x_{19}x_{18}x_{16}^5x_{15}^2x_{13}^4 + \\
& 8x_{19}x_{18}x_{16}^5x_{15}x_{13}^5 + 8x_{19}x_{18}x_{16}^5x_{14}^2x_{13}^4 \\
& -8x_{19}x_{17}^2x_{16}^4x_{15}^2x_{13}^4 + \\
& 8x_{19}x_{17}^2x_{16}^4x_{15}x_{13}^5 - 8x_{19}x_{17}x_{16}^5x_{15}x_{14}x_{13}^4 + \\
& 3x_{18}^2x_{16}^4x_{15}^2x_{13}^4 - 8x_{18}^2x_{16}^4x_{15}x_{13}^5 + \\
& 4x_{18}^2x_{16}^4x_{14}^2x_{13}^4 + 4x_{18}^2x_{16}^4x_{13}^6 \\
& -8x_{18}x_{17}x_{16}^4x_{15}x_{14}x_{13}^4 + 8x_{18}x_{16}^5x_{15}^2x_{13}^4 \\
& -8x_{18}x_{16}^5x_{15}x_{13}^5 + 4x_{17}^2x_{16}^4x_{15}^2x_{13}^4 + \\
& 4x_{16}^6x_{15}^2x_{13}^4
\end{aligned}
$$

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

$$
g \;=\; 3x_{18}^2x_{16}^4x_{15}^2x_{13}^4 - 8x_{18}^2x_{16}^4x_{15}x_{13}^5 +
$$

$$
\begin{aligned}
&4x_{18}^2x_{16}^4x_{14}^2x_{13}^4 + 4x_{18}^2x_{16}^4x_{13}^6 \\
&-8x_{18}x_{17}x_{16}^4x_{15}x_{14}x_{13}^4 + 8x_{18}x_{16}^5x_{15}^2x_{13}^4 \\
&-8x_{18}x_{16}^5x_{15}x_{13}^5 + 4x_{17}^2x_{16}^4x_{15}^2x_{13}^4 + \\
&4x_{16}^6x_{15}^2x_{13}^4
\end{aligned}
$$

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

$$
\begin{aligned}
g \;=\; & 4x_{17}^2x_{16}^4x_{15}^2x_{13}^4 + 8x_{17}x_{16}^4x_{15}x_{14}x_{13}^4x_{12} + \\
& 4x_{16}^6x_{15}^2x_{13}^4 - 8x_{16}^5x_{15}^2x_{13}^4x_{12} + \\
& 8x_{16}^5x_{15}x_{13}^5x_{12} + 3x_{16}^4x_{15}^2x_{13}^4x_{12}^2 \\
& -8x_{16}^4x_{15}x_{13}^5x_{12}^2 + 4x_{16}^4x_{14}^2x_{13}^4x_{12}^2 + \\
& 4x_{16}^4x_{13}^6x_{12}^2
\end{aligned}
$$

14. Pseudo remainder with p_{17} over variable x_{17}:

$$
\begin{aligned}
g \;=\; & 4x_{16}^6x_{15}^2x_{13}^4 - 8x_{16}^5x_{15}^2x_{13}^4x_{12} + \\
& 8x_{16}^5x_{15}x_{13}^5x_{12} + 3x_{16}^4x_{15}^2x_{13}^4x_{12}^2 + \\
& 4x_{16}^4x_{15}^2x_{13}^4x_{11}^2 - 8x_{16}^4x_{15}x_{14}x_{13}^4x_{12}x_{11} \\
& -8x_{16}^4x_{15}x_{13}^5x_{12}^2 + 4x_{16}^4x_{14}^2x_{13}^4x_{12}^2 + \\
& 4x_{16}^4x_{13}^6x_{12}^2
\end{aligned}
$$

15. Pseudo remainder with p_{16} over variable x_{16}:

$$
\begin{aligned}
g \;=\; & 3x_{15}^2x_{13}^4x_{12}^2x_{10}^4 - 12x_{15}^2x_{13}^4x_{12}^2x_{10}^3 + \\
& 18x_{15}^2x_{13}^4x_{12}^2x_{10}^2 - 12x_{15}^2x_{13}^4x_{12}^2x_{10} + \\
& 3x_{15}^2x_{13}^4x_{12}^2 + 8x_{15}^2x_{13}^4x_{12}x_{10}^5 \\
& -40x_{15}^2x_{13}^4x_{12}x_{10}^4 + 80x_{15}^2x_{13}^4x_{12}x_{10}^3 \\
& -80x_{15}^2x_{13}^4x_{12}x_{10}^2 + 40x_{15}^2x_{13}^4x_{12}x_{10} \\
& -8x_{15}^2x_{13}^4x_{12} + 4x_{15}^2x_{13}^4x_{11}^2x_{10}^4 \\
& -16x_{15}^2x_{13}^4x_{11}^2x_{10}^3 + 24x_{15}^2x_{13}^4x_{11}^2x_{10}^2 \\
& -16x_{15}^2x_{13}^4x_{11}^2x_{10} + 4x_{15}^2x_{13}^4x_{11}^2 + \\
& 4x_{15}^2x_{13}^4x_{10}^6 - 24x_{15}^2x_{13}^4x_{10}^5 + \\
& 60x_{15}^2x_{13}^4x_{10}^4 - 80x_{15}^2x_{13}^4x_{10}^3 + \\
& 60x_{15}^2x_{13}^4x_{10}^2 - 24x_{15}^2x_{13}^4x_{10} + 4x_{15}^2x_{13}^4 \\
& -8x_{15}x_{14}x_{13}^4x_{12}x_{11}x_{10}^4 + \\
& 32x_{15}x_{14}x_{13}^4x_{12}x_{11}x_{10}^3 \\
& -48x_{15}x_{14}x_{13}^4x_{12}x_{11}x_{10}^2 + 32x_{15}x_{14}x_{13}^4x_{12}x_{11}x_{10} \\
& -8x_{15}x_{14}x_{13}^4x_{12}x_{11} - 8x_{15}x_{13}^5x_{12}^2x_{10}^4 + \\
& 32x_{15}x_{13}^5x_{12}^2x_{10}^3 - 48x_{15}x_{13}^5x_{12}^2x_{10}^2 + \\
& 32x_{15}x_{13}^5x_{12}^2x_{10} - 8x_{15}x_{13}^5x_{12}^2
\end{aligned}
$$

$$
\begin{aligned}
&-8x_{15}x_{13}^5x_{12}x_{10}^5 + 40x_{15}x_{13}^5x_{12}x_{10}^4 \\
&-80x_{15}x_{13}^5x_{12}x_{10}^3 + 80x_{15}x_{13}^5x_{12}x_{10}^2 \\
&-40x_{15}x_{13}^5x_{12}x_{10} + 8x_{15}x_{13}^5x_{12} + \\
&4x_{14}^2x_{13}^4x_{12}^2x_{10}^4 - 16x_{14}^2x_{13}^4x_{12}^2x_{10}^3 + \\
&24x_{14}^2x_{13}^4x_{12}^2x_{10}^2 - 16x_{14}^2x_{13}^4x_{12}^2x_{10} + \\
&4x_{14}^2x_{13}^4x_{12}^2 + 4x_{13}^6x_{12}^2x_{10}^4 \\
&-16x_{13}^6x_{12}^2x_{10}^3 + 24x_{13}^6x_{12}^2x_{10}^2 \\
&-16x_{13}^6x_{12}^2x_{10} + 4x_{13}^6x_{12}^2
\end{aligned}
$$

16. Pseudo remainder with p_{15} over variable x_{15}:

$$
\begin{aligned}
g \;=\; & 4x_{14}^2x_{13}^4x_{12}^2x_{10}^4 - 16x_{14}^2x_{13}^4x_{12}^2x_{10}^3 + \\
& 24x_{14}^2x_{13}^4x_{12}^2x_{10}^2 - 16x_{14}^2x_{13}^4x_{12}^2x_{10} + \\
& 4x_{14}^2x_{13}^4x_{12}^2 + 8x_{14}x_{13}^4x_{12}^2x_{11}x_{10}^4 \\
& -32x_{14}x_{13}^4x_{12}^2x_{11}x_{10}^3 + 48x_{14}x_{13}^4x_{12}^2x_{11}x_{10}^2 \\
& -32x_{14}x_{13}^4x_{12}^2x_{11}x_{10} + 8x_{14}x_{13}^4x_{12}^2x_{11} + \\
& 4x_{13}^6x_{12}^2x_{10}^4 - 16x_{13}^6x_{12}^2x_{10}^3 + \\
& 24x_{13}^6x_{12}^2x_{10}^2 - 16x_{13}^6x_{12}^2x_{10} + 4x_{13}^6x_{12}^2 + \\
& 8x_{13}^5x_{12}^3x_{10}^4 - 32x_{13}^5x_{12}^3x_{10}^3 + \\
& 48x_{13}^5x_{12}^3x_{10}^2 - 32x_{13}^5x_{12}^3x_{10} + 8x_{13}^5x_{12}^3 + \\
& 8x_{13}^5x_{12}^2x_{10}^5 - 40x_{13}^5x_{12}^2x_{10}^4 + \\
& 80x_{13}^5x_{12}^2x_{10}^3 - 80x_{13}^5x_{12}^2x_{10}^2 + \\
& 40x_{13}^5x_{12}^2x_{10} - 8x_{13}^5x_{12}^2 + 3x_{13}^4x_{12}^4x_{10}^4 \\
& -12x_{13}^4x_{12}^4x_{10}^3 + 18x_{13}^4x_{12}^4x_{10}^2 \\
& -12x_{13}^4x_{12}^4x_{10} + 3x_{13}^4x_{12}^4 + 8x_{13}^4x_{12}^3x_{10}^5 \\
& -40x_{13}^4x_{12}^3x_{10}^4 + 80x_{13}^4x_{12}^3x_{10}^3 \\
& -80x_{13}^4x_{12}^3x_{10}^2 + 40x_{13}^4x_{12}^3x_{10} - 8x_{13}^4x_{12}^3 + \\
& 4x_{13}^4x_{12}^2x_{11}^2x_{10}^4 - 16x_{13}^4x_{12}^2x_{11}^2x_{10}^3 + \\
& 24x_{13}^4x_{12}^2x_{11}^2x_{10}^2 - 16x_{13}^4x_{12}^2x_{11}^2x_{10} + \\
& 4x_{13}^4x_{12}^2x_{11}^2 + 4x_{13}^4x_{12}^2x_{10}^6 \\
& -24x_{13}^4x_{12}^2x_{10}^5 + 60x_{13}^4x_{12}^2x_{10}^4 \\
& -80x_{13}^4x_{12}^2x_{10}^3 + 60x_{13}^4x_{12}^2x_{10}^2 \\
& -24x_{13}^4x_{12}^2x_{10} + 4x_{13}^4x_{12}^2
\end{aligned}
$$

17. Pseudo remainder with p_{14} over variable x_{14}:

$$
\begin{aligned}
g \;=\; & 4x_{13}^6x_{12}^2x_{10}^4 - 16x_{13}^6x_{12}^2x_{10}^3 + \\
& 24x_{13}^6x_{12}^2x_{10}^2 - 16x_{13}^6x_{12}^2x_{10} + 4x_{13}^6x_{12}^2 + \\
& 8x_{13}^5x_{12}^3x_{10}^4 - 32x_{13}^5x_{12}^3x_{10}^3 + \\
& 48x_{13}^5x_{12}^3x_{10}^2 - 32x_{13}^5x_{12}^3x_{10} + 8x_{13}^5x_{12}^3 +
\end{aligned}
$$

$$
\begin{aligned}
&8x_{13}^5x_{12}^2x_{10}^5 - 40x_{13}^5x_{12}^2x_{10}^4 + \\
&80x_{13}^5x_{12}^2x_{10}^3 - 80x_{13}^5x_{12}^2x_{10}^2 + \\
&40x_{13}^5x_{12}^2x_{10} - 8x_{13}^5x_{12}^2 + 3x_{13}^4x_{12}^4x_{10}^4 \\
&-12x_{13}^4x_{12}^4x_{10}^3 + 18x_{13}^4x_{12}^4x_{10}^2 \\
&-12x_{13}^4x_{12}^4x_{10} + 3x_{13}^4x_{12}^4 + 8x_{13}^4x_{12}^3x_{10}^5 \\
&-40x_{13}^4x_{12}^3x_{10}^4 + 80x_{13}^4x_{12}^3x_{10}^3 \\
&-80x_{13}^4x_{12}^3x_{10}^2 + 40x_{13}^4x_{12}^3x_{10} - 8x_{13}^4x_{12}^3 + \\
&4x_{13}^4x_{12}^2x_{10}^6 - 24x_{13}^4x_{12}^2x_{10}^5 + \\
&60x_{13}^4x_{12}^2x_{10}^4 - 80x_{13}^4x_{12}^2x_{10}^3 + \\
&60x_{13}^4x_{12}^2x_{10}^2 - 24x_{13}^4x_{12}^2x_{10} + 4x_{13}^4x_{12}^2
\end{aligned}
$$

18. Pseudo remainder with p_{13} over variable x_{13}:

$$
\begin{aligned}
g \;=\; & 3x_{12}^4x_{10}^8 - 12x_{12}^4x_{10}^7 + 18x_{12}^4x_{10}^6 - 12x_{12}^4x_{10}^5 + \\
& 3x_{12}^4x_{10}^4 - 8x_{12}^3x_{10}^8 + 32x_{12}^3x_{10}^7 - 48x_{12}^3x_{10}^6 + \\
& 32x_{12}^3x_{10}^5 - 8x_{12}^3x_{10}^4 + 4x_{12}^2x_{10}^8 - 16x_{12}^2x_{10}^7 + \\
& 24x_{12}^2x_{10}^6 - 16x_{12}^2x_{10}^5 + 4x_{12}^2x_{10}^4
\end{aligned}
$$

19. Pseudo remainder with p_{12} over variable x_{12}:

$$
\begin{aligned}
g \;=\; & 48x_{10}^8x_7^4 - 192x_{10}^8x_7^3 + 144x_{10}^8x_7^2 - 192x_{10}^7x_7^4 + \\
& 768x_{10}^7x_7^3 - 576x_{10}^7x_7^2 + 288x_{10}^6x_7^4 \\
& -1152x_{10}^6x_7^3 + 864x_{10}^6x_7^2 - 192x_{10}^5x_7^4 + \\
& 768x_{10}^5x_7^3 - 576x_{10}^5x_7^2 + 48x_{10}^4x_7^4 - 192x_{10}^4x_7^3 + \\
& 144x_{10}^4x_7^2
\end{aligned}
$$

20. Pseudo remainder with p_{11} over variable x_{11}:

$$
\begin{aligned}
g \;=\; & 48x_{10}^8x_7^4 - 192x_{10}^8x_7^3 + 144x_{10}^8x_7^2 - 192x_{10}^7x_7^4 + \\
& 768x_{10}^7x_7^3 - 576x_{10}^7x_7^2 + 288x_{10}^6x_7^4 \\
& -1152x_{10}^6x_7^3 + 864x_{10}^6x_7^2 - 192x_{10}^5x_7^4 + \\
& 768x_{10}^5x_7^3 - 576x_{10}^5x_7^2 + 48x_{10}^4x_7^4 - 192x_{10}^4x_7^3 + \\
& 144x_{10}^4x_7^2
\end{aligned}
$$

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

    Polynomial too big for output (text size is 3321 *characters, number of terms is* 105*)*

22. Pseudo remainder with p_9 over variable x_9:

    Polynomial too big for output (text size is 3321 *characters, number of terms is* 105*)*

23. Pseudo remainder with p_8 over variable x_8:

    Polynomial too big for output (text size is 3321 *characters, number of terms is* 105*)*

24. Pseudo remainder with p_7 over variable x_7:

$$g = 0$$

25. Pseudo remainder with p_6 over variable x_6:

$$g = 0$$

26. Pseudo remainder with p_5 over variable x_5:

$$g = 0$$

27. Pseudo remainder with p_4 over variable x_4:

$$g = 0$$

28. Pseudo remainder with p_3 over variable x_3:

$$g = 0$$

29. Pseudo remainder with p_2 over variable x_2:

$$g = 0$$

30. Pseudo remainder with p_1 over variable x_1:

$$g = 0$$

3 Prover results

Status: Theorem has been proved.

Space Complexity: The biggest polynomial obtained during prover execution contains 135 terms.

Time Complexity: Time spent by the prover is 0.352 seconds.

4 NDG Conditions

NDG Conditions in readable form

- Failed to translate NDG Conditions to readable form