OpenGeoProver Output for conjecture "Chou 196 (Nine points circle Theorem)"

Wu's method used

March 5, 2014

1 Validation of Construction Protocol

Construction steps:

- Free point A

- Free point B

- Free point C

- Line a through two points B and C

- Line b through two points C and A

- Line c through two points A and B

- Line footPointPerpLine448 through point A perpendicular to line a

- Intersection point D of point sets footPointPerpLine448 and a

- Line footPointPerpLine846 through point B perpendicular to line b

- Intersection point E of point sets footPointPerpLine846 and b

- Line footPointPerpLine92 through point C perpendicular to line c

- Intersection point F of point sets footPointPerpLine92 and c

- Midpoint C1 of segment AB

- Line ha through two points A and D

- Line hb through two points B and E

- Intersection point H of point sets ha and hb

- Midpoint A2 of segment AH

Theorem statement:

- Points D, E, F, C1, A2 are concyclic

Validation result: Construction protocol is valid.

2 Transformation of Construction Protocol to algebraic form

Transformation of Construction steps

2.1 Transformation of point A:

- Point A has been assigned following coordinates: $(0, 0)$

2.2 Transformation of point B:

- Point B has been assigned following coordinates: $(0, u_1)$

2.3 Transformation of point C:

- Point C has been assigned following coordinates: (u_2, u_3)

2.4 Transformation of point D:

- Point D has been assigned following coordinates: (x_1, x_2)
- Polynomial that point D has to satisfy is:

$$p \quad = \quad (u_3 - u_1)x_2 + u_2x_1$$

- Processing of polynomial

$$p \quad = \quad (u_3 - u_1)x_2 + u_2x_1$$

  Info: Polynomial

$$p \quad = \quad (u_3 - u_1)x_2 + u_2x_1$$

  added to system of polynomials that represents the constructions

- New polynomial added to system of hypotheses
- Polynomial that point D has to satisfy is:

$$p \quad = \quad u_2x_2 + (-u_3 + u_1)x_1 - u_2u_1$$

- Processing of polynomial

$$p \quad = \quad u_2x_2 + (-u_3 + u_1)x_1 - u_2u_1$$

  Info: Polynomial

$$p \quad = \quad u_2x_2 + (-u_3 + u_1)x_1 - u_2u_1$$

  added to system of polynomials that represents the constructions

- New polynomial added to system of hypotheses

2.5 Transformation of point E:

- Point E has been assigned following coordinates: $(x_3,\, x_4)$

- Polynomial that point E has to satisfy is:

$$p \quad = \quad u_3 x_4 + u_2 x_3 - u_3 u_1$$

- Processing of polynomial

$$p \quad = \quad u_3 x_4 + u_2 x_3 - u_3 u_1$$

  Info: Polynomial

$$p \quad = \quad u_3 x_4 + u_2 x_3 - u_3 u_1$$

  added to system of polynomials that represents the constructions

- New polynomial added to system of hypotheses

- Polynomial that point E has to satisfy is:

$$p \quad = \quad u_2 x_4 - u_3 x_3$$

- Processing of polynomial

$$p \quad = \quad u_2 x_4 - u_3 x_3$$

  Info: Polynomial

$$p \quad = \quad u_2 x_4 - u_3 x_3$$

  added to system of polynomials that represents the constructions

- New polynomial added to system of hypotheses

2.6 Transformation of point F:

- Point F has been assigned following coordinates: $(x_5,\, x_6)$

- Polynomial that point F has to satisfy is:

$$p \quad = \quad x_6 - u_3$$

- Processing of polynomial

$$p \quad = \quad x_6 - u_3$$

  Info: Will try to rename Y coordinate of point F

  Info: Y coordinate of point F renamed by independent variable u_3

- Point F has been renamed. Point F has been assigned following coordinates: $(x_5,\, u_3)$

- Polynomial that point F has to satisfy is:

$$p \quad = \quad x_5$$

- Processing of polynomial

$$p \quad = \quad x_5$$

Info: Will try to rename X coordinate of point F

Info: X coordinate of point F renamed by zero

- Point F has been renamed. Point F has been assigned following coordinates: $(0,\ u_3)$

2.7 Transformation of point C1:

- Point C1 has been assigned following coordinates: $(x_5,\ x_6)$

- Instantiating condition for X-coordinate of this point

- Processing of polynomial

$$p \quad = \quad x_5$$

Info: Will try to rename X coordinate of point C1

Info: Y coordinate of point C1 will be replaced by X coordinate

Info: X coordinate of point C1 renamed by zero

- Point C1 has been renamed. Point C1 has been assigned following coordinates: $(0,\ x_5)$

- Instantiating condition for Y-coordinate of this point

- Processing of polynomial

$$p \quad = \quad x_5 - 0.5u_1$$

Info: Polynomial

$$p \quad = \quad x_5 - 0.5u_1$$

added to system of polynomials that represents the constructions

- Instantiated condition

$$p \quad = \quad x_5 - 0.5u_1$$

is added to polynomial system

2.8 Transformation of point H:

- Point H has been assigned following coordinates: (x_6, x_7)
- Polynomial that point H has to satisfy is:

$$p \quad = \quad x_7 x_1 - x_6 x_2$$

- Processing of polynomial

$$p \quad = \quad x_7 x_1 - x_6 x_2$$

  Info: Polynomial

$$p \quad = \quad x_7 x_1 - x_6 x_2$$

  added to system of polynomials that represents the constructions

- New polynomial added to system of hypotheses
- Polynomial that point H has to satisfy is:

$$p \quad = \quad x_7 x_3 - x_6 x_4 + u_1 x_6 - u_1 x_3$$

- Processing of polynomial

$$p \quad = \quad x_7 x_3 - x_6 x_4 + u_1 x_6 - u_1 x_3$$

  Info: Polynomial

$$p \quad = \quad x_7 x_3 - x_6 x_4 + u_1 x_6 - u_1 x_3$$

  added to system of polynomials that represents the constructions

- New polynomial added to system of hypotheses

2.9 Transformation of point A2:

- Point A2 has been assigned following coordinates: (x_8, x_9)
- Instantiating condition for X-coordinate of this point
- Processing of polynomial

$$p \quad = \quad x_8 - 0.5 x_6$$

  Info: Polynomial

$$p \quad = \quad x_8 - 0.5 x_6$$

  added to system of polynomials that represents the constructions

- Instantiated condition

$$p \quad = \quad x_8 - 0.5 x_6$$

  is added to polynomial system

- Instantiating condition for Y-coordinate of this point

- Processing of polynomial

$$p \;=\; x_9 - 0.5x_7$$

Info: Polynomial

$$p \;=\; x_9 - 0.5x_7$$

added to system of polynomials that represents the constructions

- Instantiated condition

$$p \;=\; x_9 - 0.5x_7$$

is added to polynomial system

Transformation of Theorem statement

- Polynomial for theorem statement:

$$
\begin{aligned}
p \;=\;& x_9^4 x_5^2 x_1^2 - 2u_3 x_9^4 x_5 x_1^2 + u_3^2 x_9^4 x_1^2 \\
& -2x_9^3 x_5^3 x_1^2 + 2u_3 x_9^3 x_5^2 x_1^2 + \\
& 2u_3^2 x_9^3 x_5 x_1^2 - 2u_3^3 x_9^3 x_1^2 + \\
& 2x_9^2 x_8^2 x_5^2 x_1^2 - 4u_3 x_9^2 x_8^2 x_5 x_1^2 + \\
& 2u_3^2 x_9^2 x_8^2 x_1^2 + 2x_9^2 x_8 x_5^3 x_2 x_1 \\
& -2u_3 x_9^2 x_8 x_5^3 x_1 - 2x_9^2 x_8 x_5^2 x_2^2 x_1 \\
& -2u_3 x_9^2 x_8 x_5^2 x_2 x_1 - 2x_9^2 x_8 x_5^2 x_1^3 + \\
& 4u_3^2 x_9^2 x_8 x_5^2 x_1 + 4u_3 x_9^2 x_8 x_5 x_2^2 x_1 \\
& -2u_3^2 x_9^2 x_8 x_5 x_2 x_1 + 4u_3 x_9^2 x_8 x_5 x_1^3 \\
& -2u_3^3 x_9^2 x_8 x_5 x_1 - 2u_3^2 x_9^2 x_8 x_2^2 x_1 + \\
& 2u_3^3 x_9^2 x_8 x_2 x_1 - 2u_3^2 x_9^2 x_8 x_1^3 + \\
& x_9^2 x_5^4 x_1^2 + 2u_3 x_9^2 x_5^3 x_1^2 \\
& -6u_3^2 x_9^2 x_5^2 x_1^2 + 2u_3^3 x_9^2 x_5 x_1^2 + \\
& u_3^4 x_9^2 x_1^2 - 2x_9 x_8^2 x_5^3 x_1^2 + \\
& 2u_3 x_9 x_8^2 x_5^2 x_1^2 + 2u_3^2 x_9 x_8^2 x_5 x_1^2 \\
& -2u_3^3 x_9 x_8^2 x_1^2 - 2x_9 x_8 x_5^4 x_2 x_1 + \\
& 2u_3 x_9 x_8 x_5^4 x_1 + 2x_9 x_8 x_5^3 x_2^2 x_1 + \\
& 2x_9 x_8 x_5^3 x_1^3 - 2u_3^2 x_9 x_8 x_5^3 x_1 \\
& -2u_3 x_9 x_8 x_5^2 x_2^2 x_1 + 4u_3^2 x_9 x_8 x_5^2 x_2 x_1 \\
& -2u_3 x_9 x_8 x_5^2 x_1^3 - 2u_3^3 x_9 x_8 x_5^2 x_1 \\
& -2u_3^2 x_9 x_8 x_5 x_2^2 x_1 - 2u_3^2 x_9 x_8 x_5 x_1^3 + \\
& 2u_3^4 x_9 x_8 x_5 x_1 + 2u_3^3 x_9 x_8 x_2^2 x_1 \\
& -2u_3^4 x_9 x_8 x_2 x_1 + 2u_3^3 x_9 x_8 x_1^3 - 2u_3 x_9 x_5^4 x_1^2 + \\
& 2u_3^2 x_9 x_5^3 x_1^2 + 2u_3^3 x_9 x_5^2 x_1^2
\end{aligned}
$$

$$-2u_3^4 x_9 x_5 x_1^2 + x_8^4 x_5^2 x_1^2 - 2u_3 x_8^4 x_5 x_1^2 +$$
$$u_3^2 x_8^4 x_1^2 + 2x_8^3 x_5^3 x_2 x_1 - 2u_3 x_8^3 x_5^3 x_1$$
$$-2x_8^3 x_5^2 x_2^2 x_1 - 2u_3 x_8^3 x_5^2 x_2 x_1$$
$$-2x_8^3 x_5^2 x_1^3 + 4u_3^2 x_8^3 x_5^2 x_1 +$$
$$4u_3 x_8^3 x_5 x_2^2 x_1 - 2u_3^2 x_8^3 x_5 x_2 x_1 +$$
$$4u_3 x_8^3 x_5 x_1^3 - 2u_3^3 x_8^3 x_5 x_1$$
$$-2u_3^2 x_8^3 x_2^2 x_1 + 2u_3^3 x_8^3 x_2 x_1$$
$$-2u_3^2 x_8^3 x_1^3 + x_8^2 x_5^4 x_2^2 - 2u_3 x_8^2 x_5^4 x_2 +$$
$$u_3^2 x_8^2 x_5^4 - 2x_8^2 x_5^3 x_2^3 + 2u_3 x_8^2 x_5^3 x_2^2$$
$$-2x_8^2 x_5^3 x_2 x_1^2 + 2u_3^2 x_8^2 x_5^3 x_2 +$$
$$4u_3 x_8^2 x_5^3 x_1^2 - 2u_3^3 x_8^2 x_5^3 + x_8^2 x_5^2 x_2^4 +$$
$$2u_3 x_8^2 x_5^2 x_2^3 + 2x_8^2 x_5^2 x_2^2 x_1^2$$
$$-6u_3^2 x_8^2 x_5^2 x_2^2 + 2u_3 x_8^2 x_5^2 x_2 x_1^2 +$$
$$2u_3^3 x_8^2 x_5^2 x_2 + x_8^2 x_5^2 x_1^4$$
$$-8u_3^2 x_8^2 x_5^2 x_1^2 + u_3^4 x_8^2 x_5^2$$
$$-2u_3 x_8^2 x_5 x_2^4 + 2u_3^2 x_8^2 x_5 x_2^3$$
$$-4u_3 x_8^2 x_5 x_2^2 x_1^2 + 2u_3^3 x_8^2 x_5 x_2^2 +$$
$$2u_3^2 x_8^2 x_5 x_2 x_1^2 - 2u_3^4 x_8^2 x_5 x_2$$
$$-2u_3 x_8^2 x_5 x_1^4 + 4u_3^3 x_8^2 x_5 x_1^2 + u_3^2 x_8^2 x_2^4$$
$$-2u_3^3 x_8^2 x_2^3 + 2u_3^2 x_8^2 x_2^2 x_1^2 +$$
$$u_3^4 x_8^2 x_2^2 - 2u_3^3 x_8^2 x_2 x_1^2 + u_3^2 x_8^2 x_1^4 +$$
$$2u_3 x_8 x_5^4 x_2 x_1 - 2u_3^2 x_8 x_5^4 x_1$$
$$-2u_3 x_8 x_5^3 x_2^2 x_1 - 2u_3^2 x_8 x_5^3 x_2 x_1$$
$$-2u_3 x_8 x_5^3 x_1^3 + 4u_3^3 x_8 x_5^3 x_1 +$$
$$4u_3^2 x_8 x_5^2 x_2^2 x_1 - 2u_3^3 x_8 x_5^2 x_2 x_1 +$$
$$4u_3^2 x_8 x_5^2 x_1^3 - 2u_3^4 x_8 x_5^2 x_1$$
$$-2u_3^3 x_8 x_5 x_2^2 x_1 + 2u_3^4 x_8 x_5 x_2 x_1$$
$$-2u_3^3 x_8 x_5 x_1^3 + x_5^4 x_4^2 x_1^2 - 2x_5^4 x_4 x_3 x_2 x_1 +$$
$$2u_3 x_5^4 x_4 x_3 x_1 - 2u_3 x_5^4 x_4 x_1^2 + x_5^4 x_3^2 x_2^2$$
$$-2u_3 x_5^4 x_3^2 x_2 + u_3^2 x_5^4 x_3^2 + 2u_3 x_5^4 x_3 x_2 x_1$$
$$-2u_3^2 x_5^4 x_3 x_1 + 2u_3^2 x_5^4 x_1^2 - 2x_5^3 x_4^3 x_1^2 +$$
$$2x_5^3 x_4^2 x_3 x_2 x_1 - 2u_3 x_5^3 x_4^2 x_3 x_1 +$$
$$2u_3 x_5^3 x_4^2 x_1^2 - 2x_5^3 x_4 x_3^2 x_1^2 +$$
$$2x_5^3 x_4 x_3 x_2^2 x_1 + 2x_5^3 x_4 x_3 x_1^3$$
$$-2u_3^2 x_5^3 x_4 x_3 x_1 + 2u_3^2 x_5^3 x_4 x_1^2 +$$
$$2x_5^3 x_3^3 x_2 x_1 - 2u_3 x_5^3 x_3^3 x_1 - 2x_5^3 x_3^2 x_2^3 +$$
$$2u_3 x_5^3 x_3^2 x_2^2 - 2x_5^3 x_3^2 x_2 x_1^2 +$$
$$2u_3^2 x_5^3 x_3^2 x_2 + 4u_3 x_5^3 x_3^2 x_1^2$$
$$-2u_3^3 x_5^3 x_3^2 - 2u_3 x_5^3 x_3 x_2^2 x_1$$
$$-2u_3^2 x_5^3 x_3 x_2 x_1 - 2u_3 x_5^3 x_3 x_1^3 +$$

$$4u_3^3x_5^3x_3x_1 - 4u_3^3x_5^3x_1^2 + x_5^2x_4^4x_1^2 +$$
$$2u_3x_5^2x_4^3x_1^2 + 2x_5^2x_4^2x_3^2x_1^2$$
$$-2x_5^2x_4^2x_3x_2^2x_1 - 2u_3x_5^2x_4^2x_3x_2x_1$$
$$-2x_5^2x_4^2x_3x_1^3 + 4u_3^2x_5^2x_4^2x_3x_1$$
$$-6u_3^2x_5^2x_4^2x_1^2 + 2u_3x_5^2x_4x_3^2x_1^2$$
$$-2u_3x_5^2x_4x_3x_2^2x_1 + 4u_3^2x_5^2x_4x_3x_2x_1$$
$$-2u_3x_5^2x_4x_3x_1^3 - 2u_3^3x_5^2x_4x_3x_1 +$$
$$2u_3^3x_5^2x_4x_1^2 + x_5^2x_3^4x_1^2$$
$$-2x_5^2x_3^3x_2^2x_1 - 2u_3x_5^2x_3^3x_2x_1$$
$$-2x_5^2x_3^3x_1^3 + 4u_3^2x_5^2x_3^3x_1 + x_5^2x_3^2x_2^4 +$$
$$2u_3x_5^2x_3^2x_2^3 + 2x_5^2x_3^2x_2^2x_1^2$$
$$-6u_3^2x_5^2x_3^2x_2^2 + 2u_3x_5^2x_3^2x_2x_1^2 +$$
$$2u_3^3x_5^2x_3^2x_2 + x_5^2x_3^2x_1^4$$
$$-8u_3^2x_5^2x_3^2x_1^2 + u_3^4x_5^2x_3^2 +$$
$$4u_3^2x_5^2x_3x_2^2x_1 - 2u_3^3x_5^2x_3x_2x_1 +$$
$$4u_3^2x_5^2x_3x_1^3 - 2u_3^4x_5^2x_3x_1 +$$
$$2u_3^4x_5^2x_1^2 - 2u_3x_5x_4^4x_1^2 +$$
$$2u_3^2x_5x_4^3x_1^2 - 4u_3x_5x_4^2x_3^2x_1^2 +$$
$$4u_3x_5x_4^2x_3x_2^2x_1 - 2u_3^2x_5x_4^2x_3x_2x_1 +$$
$$4u_3x_5x_4^2x_3x_1^3 - 2u_3^3x_5x_4^2x_3x_1 +$$
$$2u_3^3x_5x_4^2x_1^2 + 2u_3^2x_5x_4x_3^2x_1^2$$
$$-2u_3^2x_5x_4x_3x_2^2x_1 - 2u_3^2x_5x_4x_3x_1^3 +$$
$$2u_3^4x_5x_4x_3x_1 - 2u_3^4x_5x_4x_1^2 - 2u_3x_5x_3^4x_1^2 +$$
$$4u_3x_5x_3^3x_2^2x_1 - 2u_3^2x_5x_3^3x_2x_1 +$$
$$4u_3x_5x_3^3x_1^3 - 2u_3^3x_5x_3^3x_1 - 2u_3x_5x_3^2x_2^4 +$$
$$2u_3^2x_5x_3^2x_2^3 - 4u_3x_5x_3^2x_2^2x_1^2 +$$
$$2u_3^3x_5x_3^2x_2^2 + 2u_3^2x_5x_3^2x_2x_1^2$$
$$-2u_3^4x_5x_3^2x_2 - 2u_3x_5x_3^2x_1^4 +$$
$$4u_3^3x_5x_3^2x_1^2 - 2u_3^3x_5x_3x_2^2x_1 +$$
$$2u_3^4x_5x_3x_2x_1 - 2u_3^3x_5x_3x_1^3 + u_3^2x_4^4x_1^2$$
$$-2u_3^3x_4^3x_1^2 + 2u_3^2x_4^2x_3^2x_1^2$$
$$-2u_3^2x_4^2x_3x_2^2x_1 + 2u_3^3x_4^2x_3x_2x_1$$
$$-2u_3^2x_4^2x_3x_1^3 + u_3^4x_4^2x_1^2$$
$$-2u_3^3x_4x_3^2x_1^2 + 2u_3^3x_4x_3x_2^2x_1$$
$$-2u_3^4x_4x_3x_2x_1 + 2u_3^3x_4x_3x_1^3 + u_3^2x_3^4x_1^2$$
$$-2u_3^2x_3^3x_2^2x_1 + 2u_3^3x_3^3x_2x_1$$
$$-2u_3^2x_3^3x_1^3 + u_3^2x_3^2x_2^4 - 2u_3^3x_3^2x_2^3 +$$
$$2u_3^2x_3^2x_2^2x_1^2 + u_3^4x_3^2x_2^2$$
$$-2u_3^3x_3^2x_2x_1^2 + u_3^2x_3^2x_1^4$$

Time spent for transformation of Construction Protocol to algebraic form

- 0.925 seconds

3 Invoking the theorem prover

The used proving method is Wu's method.

The input system is:

$$
\begin{aligned}
p_1 &= (u_3 - u_1)x_2 + u_2 x_1 \\
p_2 &= u_2 x_2 + (-u_3 + u_1)x_1 - u_2 u_1 \\
p_3 &= u_3 x_4 + u_2 x_3 - u_3 u_1 \\
p_4 &= u_2 x_4 - u_3 x_3 \\
p_5 &= x_5 - 0.5 u_1 \\
p_6 &= x_7 x_1 - x_6 x_2 \\
p_7 &= x_7 x_3 - x_6 x_4 + u_1 x_6 - u_1 x_3 \\
p_8 &= x_8 - 0.5 x_6 \\
p_9 &= x_9 - 0.5 x_7
\end{aligned}
$$

3.1 Triangulation, step 1

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_9. No reduction needed.

The triangular system has not been changed.

3.2 Triangulation, step 2

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_8. No reduction needed.

The triangular system has not been changed.

3.3 Triangulation, step 3

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 2.

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

Polynomial with linear degree: Removing variable x_7 from all other polynomials by reducing them with polynomial p_6 from previous step.

Finished a triangulation step, the current system is:

$$
\begin{aligned}
p_1 &= (u_3 - u_1)x_2 + u_2x_1 \\
p_2 &= u_2x_2 + (-u_3 + u_1)x_1 - u_2u_1 \\
p_3 &= u_3x_4 + u_2x_3 - u_3u_1 \\
p_4 &= u_2x_4 - u_3x_3 \\
p_5 &= x_5 - 0.5u_1 \\
p_6 &= -x_6x_4x_1 + x_6x_3x_2 + u_1x_6x_1 - u_1x_3x_1 \\
p_7 &= x_7x_1 - x_6x_2 \\
p_8 &= x_8 - 0.5x_6 \\
p_9 &= x_9 - 0.5x_7
\end{aligned}
$$

3.4   Triangulation, step 4

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_6. No reduction needed.

The triangular system has not been changed.

3.5   Triangulation, step 5

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.

3.6   Triangulation, step 6

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:

$$
\begin{aligned}
p_1 &= (u_3 - u_1)x_2 + u_2x_1 \\
p_2 &= u_2x_2 + (-u_3 + u_1)x_1 - u_2u_1 \\
p_3 &= (-u_3^2 - u_2^2)x_3 + u_3u_2u_1 \\
p_4 &= u_3x_4 + u_2x_3 - u_3u_1 \\
p_5 &= x_5 - 0.5u_1 \\
p_6 &= -x_6x_4x_1 + x_6x_3x_2 + u_1x_6x_1 - u_1x_3x_1 \\
p_7 &= x_7x_1 - x_6x_2 \\
p_8 &= x_8 - 0.5x_6 \\
p_9 &= x_9 - 0.5x_7
\end{aligned}
$$

3.7 Triangulation, step 7

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.

3.8 Triangulation, step 8

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:

$$
\begin{aligned}
p_1 &= (-u_3^2 + 2u_3u_1 - u_2^2 - u_1^2)x_1 + (-u_3u_2u_1 + u_2u_1^2) \\
p_2 &= (u_3 - u_1)x_2 + u_2x_1 \\
p_3 &= (-u_3^2 - u_2^2)x_3 + u_3u_2u_1 \\
p_4 &= u_3x_4 + u_2x_3 - u_3u_1 \\
p_5 &= x_5 - 0.5u_1 \\
p_6 &= -x_6x_4x_1 + x_6x_3x_2 + u_1x_6x_1 - u_1x_3x_1
\end{aligned}
$$

$$p_7 = x_7x_1 - x_6x_2$$
$$p_8 = x_8 - 0.5x_6$$
$$p_9 = x_9 - 0.5x_7$$

3.9 Triangulation, step 9

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:

$$p_1 = (-u_3^2 + 2u_3u_1 - u_2^2 - u_1^2)x_1 + (-u_3u_2u_1 + u_2u_1^2)$$
$$p_2 = (u_3 - u_1)x_2 + u_2x_1$$
$$p_3 = (-u_3^2 - u_2^2)x_3 + u_3u_2u_1$$
$$p_4 = u_3x_4 + u_2x_3 - u_3u_1$$
$$p_5 = x_5 - 0.5u_1$$
$$p_6 = -x_6x_4x_1 + x_6x_3x_2 + u_1x_6x_1 - u_1x_3x_1$$
$$p_7 = x_7x_1 - x_6x_2$$
$$p_8 = x_8 - 0.5x_6$$
$$p_9 = x_9 - 0.5x_7$$

4 Final Remainder

4.1 Final remainder for conjecture Chou 196 (Nine points circle Theorem)

Calculating final remainder of the conclusion:

$$\begin{aligned}
g = {} & x_9^4x_5^2x_1^2 - 2u_3x_9^4x_5x_1^2 + u_3^2x_9^4x_1^2 \\
& -2x_9^3x_5^3x_1^2 + 2u_3x_9^3x_5^2x_1^2 + \\
& 2u_3^2x_9^3x_5x_1^2 - 2u_3^3x_9^3x_1^2 + \\
& 2x_9^2x_8^2x_5^2x_1^2 - 4u_3x_9^2x_8^2x_5x_1^2 + \\
& 2u_3^2x_9^2x_8^2x_1^2 + 2x_9^2x_8x_5^3x_2x_1 \\
& -2u_3x_9^2x_8x_5^3x_1 - 2x_9^2x_8x_5^2x_2^2x_1 \\
& -2u_3x_9^2x_8x_5^2x_2x_1 - 2x_9^2x_8x_5^2x_1^3 + \\
& 4u_3^2x_9^2x_8x_5^2x_1 + 4u_3x_9^2x_8x_5x_2^2x_1 \\
& -2u_3^2x_9^2x_8x_5x_2x_1 + 4u_3x_9^2x_8x_5x_1^3
\end{aligned}$$

$$-2u_3^3 x_9^2 x_8 x_5 x_1 - 2u_3^2 x_9^2 x_8 x_2^2 x_1 +$$
$$2u_3^3 x_9^2 x_8 x_2 x_1 - 2u_3^2 x_9^2 x_8 x_1^3 +$$
$$x_9^2 x_5^4 x_1^2 + 2u_3 x_9^2 x_5^3 x_1^2$$
$$-6u_3^2 x_9^2 x_5^2 x_1^2 + 2u_3^3 x_9^2 x_5 x_1^2 +$$
$$u_3^4 x_9^2 x_1^2 - 2x_9 x_8^2 x_5^3 x_1^2 +$$
$$2u_3 x_9 x_8^2 x_5^2 x_1^2 + 2u_3^2 x_9 x_8^2 x_5 x_1^2$$
$$-2u_3^3 x_9 x_8^2 x_1^2 - 2x_9 x_8 x_5^4 x_2 x_1 +$$
$$2u_3 x_9 x_8 x_5^4 x_1 + 2x_9 x_8 x_5^3 x_2^2 x_1 +$$
$$2x_9 x_8 x_5^3 x_1^3 - 2u_3^2 x_9 x_8 x_5^3 x_1$$
$$-2u_3 x_9 x_8 x_5^2 x_2^2 x_1 + 4u_3^2 x_9 x_8 x_5^2 x_2 x_1$$
$$-2u_3 x_9 x_8 x_5^2 x_1^3 - 2u_3^3 x_9 x_8 x_5^2 x_1$$
$$-2u_3^2 x_9 x_8 x_5 x_2^2 x_1 - 2u_3^2 x_9 x_8 x_5 x_1^3 +$$
$$2u_3^4 x_9 x_8 x_5 x_1 + 2u_3^3 x_9 x_8 x_2^2 x_1$$
$$-2u_3^4 x_9 x_8 x_2 x_1 + 2u_3^3 x_9 x_8 x_1^3 - 2u_3 x_9 x_5^4 x_1^2 +$$
$$2u_3^2 x_9 x_5^3 x_1^2 + 2u_3^3 x_9 x_5^2 x_1^2$$
$$-2u_3^4 x_9 x_5 x_1^2 + x_8^4 x_5^2 x_1^2 - 2u_3 x_8^4 x_5 x_1^2 +$$
$$u_3^2 x_8^4 x_1^2 + 2x_8^3 x_5^3 x_2 x_1 - 2u_3 x_8^3 x_5^3 x_1$$
$$-2x_8^3 x_5^2 x_2^2 x_1 - 2u_3 x_8^3 x_5^2 x_2 x_1$$
$$-2x_8^3 x_5^2 x_1^3 + 4u_3^2 x_8^3 x_5^2 x_1 +$$
$$4u_3 x_8^3 x_5 x_2^2 x_1 - 2u_3^2 x_8^3 x_5 x_2 x_1 +$$
$$4u_3 x_8^3 x_5 x_1^3 - 2u_3^3 x_8^3 x_5 x_1$$
$$-2u_3^2 x_8^3 x_2^2 x_1 + 2u_3^3 x_8^3 x_2 x_1$$
$$-2u_3^2 x_8^3 x_1^3 + x_8^2 x_5^4 x_2^2 - 2u_3 x_8^2 x_5^4 x_2 +$$
$$u_3^2 x_8^2 x_5^4 - 2x_8^2 x_5^3 x_2^3 + 2u_3 x_8^2 x_5^3 x_2^2$$
$$-2x_8^2 x_5^3 x_2 x_1^2 + 2u_3^2 x_8^2 x_5^3 x_2 +$$
$$4u_3 x_8^2 x_5^3 x_1^2 - 2u_3^3 x_8^2 x_5^3 + x_8^2 x_5^2 x_2^4 +$$
$$2u_3 x_8^2 x_5^2 x_2^3 + 2x_8^2 x_5^2 x_2^2 x_1^2$$
$$-6u_3^2 x_8^2 x_5^2 x_2^2 + 2u_3 x_8^2 x_5^2 x_2 x_1^2 +$$
$$2u_3^3 x_8^2 x_5^2 x_2 + x_8^2 x_5^2 x_1^4$$
$$-8u_3^2 x_8^2 x_5^2 x_1^2 + u_3^4 x_8^2 x_5^2$$
$$-2u_3 x_8^2 x_5 x_2^4 + 2u_3^2 x_8^2 x_5 x_2^3$$
$$-4u_3 x_8^2 x_5 x_2^2 x_1^2 + 2u_3^3 x_8^2 x_5 x_2^2 +$$
$$2u_3^2 x_8^2 x_5 x_2 x_1^2 - 2u_3^4 x_8^2 x_5 x_2$$
$$-2u_3 x_8^2 x_5 x_1^4 + 4u_3^3 x_8^2 x_5 x_1^2 + u_3^2 x_8^2 x_2^4$$
$$-2u_3^3 x_8^2 x_2^3 + 2u_3^2 x_8^2 x_2^2 x_1^2 +$$
$$u_3^4 x_8^2 x_2^2 - 2u_3^3 x_8^2 x_2 x_1^2 + u_3^2 x_8^2 x_1^4 +$$
$$2u_3 x_8 x_5^4 x_2 x_1 - 2u_3^2 x_8 x_5^4 x_1$$
$$-2u_3 x_8 x_5^3 x_2^2 x_1 - 2u_3^2 x_8 x_5^3 x_2 x_1$$
$$-2u_3 x_8 x_5^3 x_1^3 + 4u_3^3 x_8 x_5^3 x_1 +$$
$$4u_3^2 x_8 x_5^2 x_2^2 x_1 - 2u_3^3 x_8 x_5^2 x_2 x_1 +$$

$$4u_3^2 x_8 x_5^2 x_1^3 - 2u_3^4 x_8 x_5^2 x_1$$
$$-2u_3^3 x_8 x_5 x_2^2 x_1 + 2u_3^4 x_8 x_5 x_2 x_1$$
$$-2u_3^3 x_8 x_5 x_1^3 + x_5^4 x_4^2 x_1^2 - 2x_5^4 x_4 x_3 x_2 x_1 +$$
$$2u_3 x_5^4 x_4 x_3 x_1 - 2u_3 x_5^4 x_4 x_1^2 + x_5^4 x_3^2 x_2^2$$
$$-2u_3 x_5^4 x_3^2 x_2 + u_3^2 x_5^4 x_3^2 + 2u_3 x_5^4 x_3 x_2 x_1$$
$$-2u_3^2 x_5^4 x_3 x_1 + 2u_3^2 x_5^4 x_1^2 - 2x_5^3 x_4^3 x_1^2 +$$
$$2x_5^3 x_4^2 x_3 x_2 x_1 - 2u_3 x_5^3 x_4^2 x_3 x_1 +$$
$$2u_3 x_5^3 x_4^2 x_1^2 - 2x_5^3 x_4 x_3^2 x_1^2 +$$
$$2x_5^3 x_4 x_3 x_2^2 x_1 + 2x_5^3 x_4 x_3 x_1^3$$
$$-2u_3^2 x_5^3 x_4 x_3 x_1 + 2u_3^2 x_5^3 x_4 x_1^2 +$$
$$2x_5^3 x_3^3 x_2 x_1 - 2u_3 x_5^3 x_3^3 x_1 - 2x_5^3 x_3^2 x_2^3 +$$
$$2u_3 x_5^3 x_3^2 x_2^2 - 2x_5^3 x_3^2 x_2 x_1^2 +$$
$$2u_3^2 x_5^3 x_3^2 x_2 + 4u_3 x_5^3 x_3^2 x_1^2$$
$$-2u_3^3 x_5^3 x_3^2 - 2u_3 x_5^3 x_3 x_2^2 x_1$$
$$-2u_3^2 x_5^3 x_3 x_2 x_1 - 2u_3 x_5^3 x_3 x_1^3 +$$
$$4u_3^3 x_5^3 x_3 x_1 - 4u_3^3 x_5^3 x_1^2 + x_5^2 x_4^4 x_1^2 +$$
$$2u_3 x_5^2 x_4^3 x_1^2 + 2x_5^2 x_4^2 x_3^2 x_1^2$$
$$-2x_5^2 x_4^2 x_3 x_2^2 x_1 - 2u_3 x_5^2 x_4^2 x_3 x_2 x_1$$
$$-2x_5^2 x_4^2 x_3 x_1^3 + 4u_3^2 x_5^2 x_4^2 x_3 x_1$$
$$-6u_3^2 x_5^2 x_4^2 x_1^2 + 2u_3 x_5^2 x_4 x_3^3 x_1^2$$
$$-2u_3 x_5^2 x_4 x_3 x_2^2 x_1 + 4u_3^2 x_5^2 x_4 x_3 x_2 x_1$$
$$-2u_3 x_5^2 x_4 x_3 x_1^3 - 2u_3^3 x_5^2 x_4 x_3 x_1 +$$
$$2u_3^3 x_5^2 x_4 x_1^2 + x_5^2 x_3^4 x_1^2$$
$$-2x_5^2 x_3^3 x_2^2 x_1 - 2u_3 x_5^2 x_3^3 x_2 x_1$$
$$-2x_5^2 x_3^3 x_1^3 + 4u_3^2 x_5^2 x_3^3 x_1 + x_5^2 x_3^2 x_2^4 +$$
$$2u_3 x_5^2 x_3^2 x_2^3 + 2x_5^2 x_3^2 x_2^2 x_1^2$$
$$-6u_3^2 x_5^2 x_3^2 x_2^2 + 2u_3 x_5^2 x_3^2 x_2 x_1^2 +$$
$$2u_3^3 x_5^2 x_3^2 x_2 + x_5^2 x_3^2 x_1^4$$
$$-8u_3^2 x_5^2 x_3^2 x_1^2 + u_3^4 x_5^2 x_3^2 +$$
$$4u_3^2 x_5^2 x_3 x_2^2 x_1 - 2u_3^3 x_5^2 x_3 x_2 x_1 +$$
$$4u_3^2 x_5^2 x_3 x_1^3 - 2u_3^4 x_5^2 x_3 x_1 +$$
$$2u_3^4 x_5^2 x_1^2 - 2u_3 x_5 x_4^4 x_1^2 +$$
$$2u_3^2 x_5 x_4^3 x_1^2 - 4u_3 x_5 x_4^2 x_3^2 x_1^2 +$$
$$4u_3 x_5 x_4^2 x_3 x_2^2 x_1 - 2u_3^2 x_5 x_4^2 x_3 x_2 x_1 +$$
$$4u_3 x_5 x_4^2 x_3 x_1^3 - 2u_3^3 x_5 x_4^2 x_3 x_1 +$$
$$2u_3^3 x_5 x_4^2 x_1^2 + 2u_3^2 x_5 x_4 x_3^2 x_1^2$$
$$-2u_3^2 x_5 x_4 x_3 x_2^2 x_1 - 2u_3^2 x_5 x_4 x_3 x_1^3 +$$
$$2u_3^4 x_5 x_4 x_3 x_1 - 2u_3^4 x_5 x_4 x_1^2 - 2u_3 x_5 x_3^4 x_1^2 +$$
$$4u_3 x_5 x_3^3 x_2^2 x_1 - 2u_3^2 x_5 x_3^3 x_2 x_1 +$$
$$4u_3 x_5 x_3^3 x_1^3 - 2u_3^3 x_5 x_3^3 x_1 - 2u_3 x_5 x_3^2 x_2^4 +$$

$$2u_3^2 x_5 x_3^2 x_2^3 - 4u_3 x_5 x_3^2 x_2^2 x_1^2 +$$
$$2u_3^3 x_5 x_3^2 x_2^2 + 2u_3^2 x_5 x_3^2 x_2 x_1^2$$
$$-2u_3^4 x_5 x_3^2 x_2 - 2u_3 x_5 x_3^2 x_1^4 +$$
$$4u_3^3 x_5 x_3^2 x_1^2 - 2u_3^3 x_5 x_3 x_2^2 x_1 +$$
$$2u_3^4 x_5 x_3 x_2 x_1 - 2u_3^3 x_5 x_3 x_1^3 + u_3^2 x_4^4 x_1^2$$
$$-2u_3^3 x_4^3 x_1^2 + 2u_3^2 x_4^2 x_3^2 x_1^2$$
$$-2u_3^2 x_4^2 x_3 x_2^2 x_1 + 2u_3^3 x_4^2 x_3 x_2 x_1$$
$$-2u_3^2 x_4^2 x_3 x_1^3 + u_3^4 x_4^2 x_1^2$$
$$-2u_3^3 x_4 x_3^2 x_1^2 + 2u_3^3 x_4 x_3 x_2^2 x_1$$
$$-2u_3^4 x_4 x_3 x_2 x_1 + 2u_3^3 x_4 x_3 x_1^3 + u_3^2 x_3^4 x_1^2$$
$$-2u_3^2 x_3^3 x_2^2 x_1 + 2u_3^3 x_3^3 x_2 x_1$$
$$-2u_3^2 x_3^3 x_1^3 + u_3^2 x_3^2 x_2^4 - 2u_3^3 x_3^2 x_2^3 +$$
$$2u_3^2 x_3^2 x_2^2 x_1^2 + u_3^4 x_3^2 x_2^2$$
$$-2u_3^3 x_3^2 x_2 x_1^2 + u_3^2 x_3^2 x_1^4$$

with respect to the triangular system.

1. Pseudo remainder with p_9 over variable x_9:

$$
\begin{aligned}
g \quad = \quad & x_8^4 x_5^2 x_1^2 - 2u_3 x_8^4 x_5 x_1^2 + u_3^2 x_8^4 x_1^2 + \\
& 2x_8^3 x_5^3 x_2 x_1 - 2u_3 x_8^3 x_5^3 x_1 \\
& -2x_8^3 x_5^2 x_2^2 x_1 - 2u_3 x_8^3 x_5^2 x_2 x_1 \\
& -2x_8^3 x_5^2 x_1^3 + 4u_3^2 x_8^3 x_5^2 x_1 + \\
& 4u_3 x_8^3 x_5 x_2^2 x_1 - 2u_3^2 x_8^3 x_5 x_2 x_1 + \\
& 4u_3 x_8^3 x_5 x_1^3 - 2u_3^3 x_8^3 x_5 x_1 \\
& -2u_3^2 x_8^3 x_2^2 x_1 + 2u_3^3 x_8^3 x_2 x_1 \\
& -2u_3^2 x_8^3 x_1^3 + 0.5 x_8^2 x_7^2 x_5^2 x_1^2 \\
& -u_3 x_8^2 x_7^2 x_5 x_1^2 + 0.5 u_3^2 x_8^2 x_7^2 x_1^2 \\
& -x_8^2 x_7 x_5^3 x_1^2 + u_3 x_8^2 x_7 x_5^2 x_1^2 + \\
& u_3^2 x_8^2 x_7 x_5 x_1^2 - u_3^3 x_8^2 x_7 x_1^2 + \\
& x_8^2 x_5^4 x_2^2 - 2u_3 x_8^2 x_5^4 x_2 + u_3^2 x_8^2 x_5^4 \\
& -2x_8^2 x_5^3 x_2^3 + 2u_3 x_8^2 x_5^3 x_2^2 \\
& -2x_8^2 x_5^3 x_2 x_1^2 + 2u_3^2 x_8^2 x_5^3 x_2 + \\
& 4u_3 x_8^2 x_5^3 x_1^2 - 2u_3^3 x_8^2 x_5^3 + x_8^2 x_5^2 x_2^4 + \\
& 2u_3 x_8^2 x_5^2 x_2^3 + 2x_8^2 x_5^2 x_2^2 x_1^2 \\
& -6u_3^2 x_8^2 x_5^2 x_2^2 + 2u_3 x_8^2 x_5^2 x_2 x_1^2 + \\
& 2u_3^3 x_8^2 x_5^2 x_2 + x_8^2 x_5^2 x_1^4 \\
& -8u_3^2 x_8^2 x_5^2 x_1^2 + u_3^4 x_8^2 x_5^2 \\
& -2u_3 x_8^2 x_5 x_2^4 + 2u_3^2 x_8^2 x_5 x_2^3 \\
& -4u_3 x_8^2 x_5 x_2^2 x_1^2 + 2u_3^3 x_8^2 x_5 x_2^2 + \\
& 2u_3^2 x_8^2 x_5 x_2 x_1^2 - 2u_3^4 x_8^2 x_5 x_2
\end{aligned}
$$

$$-2u_3x_8^2x_5x_1^4 + 4u_3^3x_8^2x_5x_1^2 + u_3^2x_8^2x_2^4$$
$$-2u_3^3x_8^2x_2^3 + 2u_3^2x_8^2x_2^2x_1^2 +$$
$$u_3^4x_8^2x_2^2 - 2u_3^3x_8^2x_2x_1^2 + u_3^2x_8^2x_1^4 +$$
$$0.5x_8x_7^2x_5^3x_2x_1 - 0.5u_3x_8x_7^2x_5^3x_1$$
$$-0.5x_8x_7^2x_5^2x_2^2x_1 - 0.5u_3x_8x_7^2x_5^2x_2x_1$$
$$-0.5x_8x_7^2x_5^2x_1^3 + u_3^2x_8x_7^2x_5^2x_1 +$$
$$u_3x_8x_7^2x_5x_2^2x_1 - 0.5u_3^2x_8x_7^2x_5x_2x_1 +$$
$$u_3x_8x_7^2x_5x_1^3 - 0.5u_3^3x_8x_7^2x_5x_1$$
$$-0.5u_3^2x_8x_7^2x_2^2x_1 + 0.5u_3^3x_8x_7^2x_2x_1$$
$$-0.5u_3^3x_8x_7^2x_1^3 - x_8x_7x_5^4x_2x_1 +$$
$$u_3x_8x_7x_5^4x_1 + x_8x_7x_5^3x_2^2x_1 + x_8x_7x_5^3x_1^3$$
$$-u_3^2x_8x_7x_5^3x_1 - u_3x_8x_7x_5^2x_2^2x_1 +$$
$$2u_3^2x_8x_7x_5^2x_2x_1 - u_3x_8x_7x_5^2x_1^3$$
$$-u_3^3x_8x_7x_5^2x_1 - u_3^2x_8x_7x_5x_2^2x_1$$
$$-u_3^2x_8x_7x_5x_1^3 + u_3^4x_8x_7x_5x_1 +$$
$$u_3^3x_8x_7x_2^2x_1 - u_3^4x_8x_7x_2x_1 +$$
$$u_3^3x_8x_7x_1^3 + 2u_3x_8x_5^4x_2x_1 - 2u_3^2x_8x_5^4x_1$$
$$-2u_3x_8x_5^3x_2^2x_1 - 2u_3^2x_8x_5^3x_2x_1$$
$$-2u_3x_8x_5^3x_1^3 + 4u_3^3x_8x_5^3x_1 +$$
$$4u_3^2x_8x_5^2x_2^2x_1 - 2u_3^3x_8x_5^2x_2x_1 +$$
$$4u_3^2x_8x_5^2x_1^3 - 2u_3^4x_8x_5^2x_1$$
$$-2u_3^3x_8x_5x_2^2x_1 + 2u_3^4x_8x_5x_2x_1$$
$$-2u_3^3x_8x_5x_1^3 + 0.0625x_7^4x_5^2x_1^2$$
$$-0.125u_3x_7^4x_5x_1^2 + 0.0625u_3^2x_7^4x_1^2$$
$$-0.25x_7^3x_5^3x_1^2 + 0.25u_3x_7^3x_5^2x_1^2 +$$
$$0.25u_3^2x_7^3x_5x_1^2 - 0.25u_3^3x_7^3x_1^2 +$$
$$0.25x_7^2x_5^4x_1^2 + 0.5u_3x_7^2x_5^3x_1^2$$
$$-1.5u_3^2x_7^2x_5^2x_1^2 + 0.5u_3^3x_7^2x_5x_1^2 +$$
$$0.25u_3^4x_7^2x_1^2 - u_3x_7x_5^4x_1^2 +$$
$$u_3^2x_7x_5^3x_1^2 + u_3^3x_7x_5^2x_1^2$$
$$-u_3^4x_7x_5x_1^2 + x_5^4x_4^2x_1^2 - 2x_5^4x_4x_3x_2x_1 +$$
$$2u_3x_5^4x_4x_3x_1 - 2u_3x_5^4x_4x_1^2 + x_5^4x_3^2x_2^2$$
$$-2u_3x_5^4x_3^2x_2 + u_3^2x_5^4x_3^2 + 2u_3x_5^4x_3x_2x_1$$
$$-2u_3^2x_5^4x_3x_1 + 2u_3^2x_5^4x_1^2 - 2x_5^3x_4^3x_1^2 +$$
$$2x_5^3x_4^2x_3x_2x_1 - 2u_3x_5^3x_4^2x_3x_1 +$$
$$2u_3x_5^3x_4^2x_1^2 - 2x_5^3x_4x_3^2x_1^2 +$$
$$2x_5^3x_4x_3x_2^2x_1 + 2x_5^3x_4x_3x_1^3$$
$$-2u_3^2x_5^3x_4x_3x_1 + 2u_3^2x_5^3x_4x_1^2 +$$
$$2x_5^3x_3^3x_2x_1 - 2u_3x_5^3x_3^3x_1 - 2x_5^3x_3^2x_2^3 +$$
$$2u_3x_5^3x_3^2x_2^2 - 2x_5^3x_3^2x_2x_1^2 +$$

$$2u_3^2x_5^3x_3^2x_2 + 4u_3x_5^3x_3^2x_1^2$$
$$-2u_3^3x_5^3x_3^2 - 2u_3x_5^3x_3x_2^2x_1$$
$$-2u_3^2x_5^3x_3x_2x_1 - 2u_3x_5^3x_3x_1^3 +$$
$$4u_3^3x_5^3x_3x_1 - 4u_3^3x_5^3x_1^2 + x_5^2x_4^4x_1^2 +$$
$$2u_3x_5^2x_4^3x_1^2 + 2x_5^2x_4^2x_3^2x_1^2$$
$$-2x_5^2x_4^2x_3x_2^2x_1 - 2u_3x_5^2x_4^2x_3x_2x_1$$
$$-2x_5^2x_4^2x_3x_1^3 + 4u_3^2x_5^2x_4^2x_3x_1$$
$$-6u_3^2x_5^2x_4^2x_1^2 + 2u_3x_5^2x_4x_3^2x_1^2$$
$$-2u_3x_5^2x_4x_3x_2^2x_1 + 4u_3^2x_5^2x_4x_3x_2x_1$$
$$-2u_3x_5^2x_4x_3x_1^3 - 2u_3^3x_5^2x_4x_3x_1 +$$
$$2u_3^3x_5^2x_4x_1^2 + x_5^2x_3^4x_1^2$$
$$-2x_5^2x_3^3x_2^2x_1 - 2u_3x_5^2x_3^3x_2x_1$$
$$-2x_5^2x_3^3x_1^3 + 4u_3^2x_5^2x_3^3x_1 + x_5^2x_3^2x_2^4 +$$
$$2u_3x_5^2x_3^2x_2^3 + 2x_5^2x_3^2x_2^2x_1^2$$
$$-6u_3^2x_5^2x_3^2x_2^2 + 2u_3x_5^2x_3^2x_2x_1^2 +$$
$$2u_3^3x_5^2x_3^2x_2 + x_5^2x_3^2x_1^4$$
$$-8u_3^2x_5^2x_3^2x_1^2 + u_3^4x_5^2x_3^2 +$$
$$4u_3^2x_5^2x_3x_2^2x_1 - 2u_3^3x_5^2x_3x_2x_1 +$$
$$4u_3^2x_5^2x_3x_1^3 - 2u_3^4x_5^2x_3x_1 +$$
$$2u_3^4x_5^2x_1^2 - 2u_3x_5x_4^4x_1^2 +$$
$$2u_3^2x_5x_4^3x_1^2 - 4u_3x_5x_4^2x_3^2x_1^2 +$$
$$4u_3x_5x_4^2x_3x_2^2x_1 - 2u_3^2x_5x_4^2x_3x_2x_1 +$$
$$4u_3x_5x_4^2x_3x_1^3 - 2u_3^3x_5x_4^2x_3x_1 +$$
$$2u_3^3x_5x_4^2x_1^2 + 2u_3^2x_5x_4x_3^2x_1^2$$
$$-2u_3^2x_5x_4x_3x_2^2x_1 - 2u_3^2x_5x_4x_3x_1^3 +$$
$$2u_3^4x_5x_4x_3x_1 - 2u_3^4x_5x_4x_1^2 - 2u_3x_5x_3^4x_1^2 +$$
$$4u_3x_5x_3^3x_2^2x_1 - 2u_3^2x_5x_3^3x_2x_1 +$$
$$4u_3x_5x_3^3x_1^3 - 2u_3^3x_5x_3^3x_1 - 2u_3x_5x_3^2x_2^4 +$$
$$2u_3^2x_5x_3^2x_2^3 - 4u_3x_5x_3^2x_2^2x_1^2 +$$
$$2u_3^3x_5x_3^2x_2^2 + 2u_3^2x_5x_3^2x_2x_1^2$$
$$-2u_3^4x_5x_3^2x_2 - 2u_3x_5x_3^2x_1^4 +$$
$$4u_3^3x_5x_3^2x_1^2 - 2u_3^3x_5x_3x_2^2x_1 +$$
$$2u_3^4x_5x_3x_2x_1 - 2u_3^3x_5x_3x_1^3 + u_3^2x_4^4x_1^2$$
$$-2u_3^3x_4^3x_1^2 + 2u_3^2x_4^2x_3^2x_1^2$$
$$-2u_3^2x_4^2x_3x_2^2x_1 + 2u_3^3x_4^2x_3x_2x_1$$
$$-2u_3^2x_4^2x_3x_1^3 + u_3^4x_4^2x_1^2$$
$$-2u_3^3x_4x_3^2x_1^2 + 2u_3^3x_4x_3x_2^2x_1$$
$$-2u_3^4x_4x_3x_2x_1 + 2u_3^3x_4x_3x_1^3 + u_3^2x_3^4x_1^2$$
$$-2u_3^2x_3^3x_2^2x_1 + 2u_3^3x_3^3x_2x_1$$
$$-2u_3^2x_3^3x_1^3 + u_3^2x_3^2x_2^4 - 2u_3^3x_3^2x_2^3 +$$

$$2u_3^2x_3^2x_2^2x_1^2 + u_3^4x_3^2x_2^2$$
$$-2u_3^3x_3^2x_2x_1^2 + u_3^2x_3^2x_1^4$$

2. Pseudo remainder with p_8 over variable x_8:

$$
\begin{aligned}
g \;=\; & 0.0625x_7^4x_5^2x_1^2 - 0.125u_3x_7^4x_5x_1^2 + \\
& 0.0625u_3^2x_7^4x_1^2 - 0.25x_7^3x_5^3x_1^2 + \\
& 0.25u_3x_7^3x_5^2x_1^2 + 0.25u_3^2x_7^3x_5x_1^2 \\
& -0.25u_3^3x_7^3x_1^2 + 0.125x_7^2x_6^2x_5^2x_1^2 \\
& -0.25u_3x_7^2x_6^2x_5x_1^2 + 0.125u_3^2x_7^2x_6^2x_1^2 + \\
& 0.25x_7^2x_6x_5^3x_2x_1 - 0.25u_3x_7^2x_6x_5^3x_1 \\
& -0.25x_7^2x_6x_5^2x_2^2x_1 - 0.25u_3x_7^2x_6x_5^2x_2x_1 \\
& -0.25x_7^2x_6x_5^2x_1^3 + 0.5u_3^2x_7^2x_6x_5^2x_1 + \\
& 0.5u_3x_7^2x_6x_5x_2^2x_1 - 0.25u_3^2x_7^2x_6x_5x_2x_1 + \\
& 0.5u_3x_7^2x_6x_5x_1^3 - 0.25u_3^3x_7^2x_6x_5x_1 \\
& -0.25u_3^2x_7^2x_6x_2^2x_1 + 0.25u_3^3x_7^2x_6x_2x_1 \\
& -0.25u_3^2x_7^2x_6x_1^3 + 0.25x_7^2x_5^4x_1^2 + \\
& 0.5u_3x_7^2x_5^3x_1^2 - 1.5u_3^2x_7^2x_5^2x_1^2 + \\
& 0.5u_3^3x_7^2x_5x_1^2 + 0.25u_3^4x_7^2x_1^2 \\
& -0.25x_7x_6^2x_5^3x_1^2 + 0.25u_3x_7x_6^2x_5^2x_1^2 + \\
& 0.25u_3^2x_7x_6^2x_5x_1^2 - 0.25u_3^3x_7x_6^2x_1^2 \\
& -0.5x_7x_6x_5^4x_2x_1 + 0.5u_3x_7x_6x_5^4x_1 + \\
& 0.5x_7x_6x_5^3x_2^2x_1 + 0.5x_7x_6x_5^3x_1^3 \\
& -0.5u_3^2x_7x_6x_5^3x_1 - 0.5u_3x_7x_6x_5^2x_2^2x_1 + \\
& u_3^2x_7x_6x_5^2x_2x_1 - 0.5u_3x_7x_6x_5^2x_1^3 \\
& -0.5u_3^3x_7x_6x_5^2x_1 - 0.5u_3^2x_7x_6x_5x_2^2x_1 \\
& -0.5u_3^2x_7x_6x_5x_1^3 + 0.5u_3^4x_7x_6x_5x_1 + \\
& 0.5u_3^3x_7x_6x_2^2x_1 - 0.5u_3^4x_7x_6x_2x_1 + \\
& 0.5u_3^3x_7x_6x_1^3 - u_3x_7x_5^4x_1^2 + \\
& u_3^2x_7x_5^3x_1^2 + u_3^3x_7x_5^2x_1^2 \\
& -u_3^4x_7x_5x_1^2 + 0.0625x_6^4x_5^2x_1^2 \\
& -0.125u_3x_6^4x_5x_1^2 + 0.0625u_3^2x_6^4x_1^2 + \\
& 0.25x_6^3x_5^3x_2x_1 - 0.25u_3x_6^3x_5^3x_1 \\
& -0.25x_6^3x_5^2x_2^2x_1 - 0.25u_3x_6^3x_5^2x_2x_1 \\
& -0.25x_6^3x_5^2x_1^3 + 0.5u_3^2x_6^3x_5^2x_1 + \\
& 0.5u_3x_6^3x_5x_2^2x_1 - 0.25u_3^2x_6^3x_5x_2x_1 + \\
& 0.5u_3x_6^3x_5x_1^3 - 0.25u_3^3x_6^3x_5x_1 \\
& -0.25u_3^2x_6^3x_2^2x_1 + 0.25u_3^3x_6^3x_2x_1 \\
& -0.25u_3^2x_6^3x_1^3 + 0.25x_6^2x_5^4x_2^2 \\
& -0.5u_3x_6^2x_5^4x_2 + 0.25u_3^2x_6^2x_5^4
\end{aligned}
$$

$$-0.5x_6^2x_5^3x_2^3 + 0.5u_3x_6^2x_5^3x_2^2$$
$$-0.5x_6^2x_5^3x_2x_1^2 + 0.5u_3^2x_6^2x_5^3x_2 +$$
$$u_3x_6^2x_5^3x_1^2 - 0.5u_3^3x_6^2x_5^3 +$$
$$0.25x_6^2x_5^2x_2^4 + 0.5u_3x_6^2x_5^2x_2^3 +$$
$$0.5x_6^2x_5^2x_2^2x_1^2 - 1.5u_3^2x_6^2x_5^2x_2^2 +$$
$$0.5u_3x_6^2x_5^2x_2x_1^2 + 0.5u_3^3x_6^2x_5^2x_2 +$$
$$0.25x_6^2x_5^2x_1^4 - 2u_3^2x_6^2x_5^2x_1^2 +$$
$$0.25u_3^4x_6^2x_5^2 - 0.5u_3x_6^2x_5x_2^4 +$$
$$0.5u_3^2x_6^2x_5x_2^3 - u_3x_6^2x_5x_2^2x_1^2 +$$
$$0.5u_3^3x_6^2x_5x_2^2 + 0.5u_3^2x_6^2x_5x_2x_1^2$$
$$-0.5u_3^4x_6^2x_5x_2 - 0.5u_3x_6^2x_5x_1^4 +$$
$$u_3^3x_6^2x_5x_1^2 + 0.25u_3^2x_6^2x_2^4$$
$$-0.5u_3^3x_6^2x_2^3 + 0.5u_3^2x_6^2x_2^2x_1^2 +$$
$$0.25u_3^4x_6^2x_2^2 - 0.5u_3^3x_6^2x_2x_1^2 +$$
$$0.25u_3^2x_6^2x_1^4 + u_3x_6x_5^4x_2x_1 - u_3^2x_6x_5^4x_1$$
$$-u_3x_6x_5^3x_2^2x_1 - u_3^2x_6x_5^3x_2x_1$$
$$-u_3x_6x_5^3x_1^3 + 2u_3^3x_6x_5^3x_1 +$$
$$2u_3^2x_6x_5^2x_2^2x_1 - u_3^3x_6x_5^2x_2x_1 +$$
$$2u_3^2x_6x_5^2x_1^3 - u_3^4x_6x_5^2x_1$$
$$-u_3^3x_6x_5x_2^2x_1 + u_3^4x_6x_5x_2x_1$$
$$-u_3^3x_6x_5x_1^3 + x_5^4x_4^2x_1^2 - 2x_5^4x_4x_3x_2x_1 +$$
$$2u_3x_5^4x_4x_3x_1 - 2u_3x_5^4x_4x_1^2 + x_5^4x_3^2x_2^2$$
$$-2u_3x_5^4x_3^2x_2 + u_3^2x_5^4x_3^2 + 2u_3x_5^4x_3x_2x_1$$
$$-2u_3^2x_5^4x_3x_1 + 2u_3^2x_5^4x_1^2 - 2x_5^3x_4^3x_1^2 +$$
$$2x_5^3x_4^2x_3x_2x_1 - 2u_3x_5^3x_4^2x_3x_1 +$$
$$2u_3x_5^3x_4^2x_1^2 - 2x_5^3x_4x_3^2x_1^2 +$$
$$2x_5^3x_4x_3x_2^2x_1 + 2x_5^3x_4x_3x_1^3$$
$$-2u_3^2x_5^3x_4x_3x_1 + 2u_3^2x_5^3x_4x_1^2 +$$
$$2x_5^3x_3^3x_2x_1 - 2u_3x_5^3x_3^3x_1 - 2x_5^3x_3^2x_2^3 +$$
$$2u_3x_5^3x_3^2x_2^2 - 2x_5^3x_3^2x_2x_1^2 +$$
$$2u_3^2x_5^3x_3^2x_2 + 4u_3x_5^3x_3^2x_1^2$$
$$-2u_3^3x_5^3x_3^2 - 2u_3x_5^3x_3x_2^2x_1$$
$$-2u_3^2x_5^3x_3x_2x_1 - 2u_3x_5^3x_3x_1^3 +$$
$$4u_3^3x_5^3x_3x_1 - 4u_3^3x_5^3x_1^2 + x_5^2x_4^4x_1^2 +$$
$$2u_3x_5^2x_4^3x_1^2 + 2x_5^2x_4^2x_3^2x_1^2$$
$$-2x_5^2x_4^2x_3x_2^2x_1 - 2u_3x_5^2x_4^2x_3x_2x_1$$
$$-2x_5^2x_4^2x_3x_1^3 + 4u_3^2x_5^2x_4^2x_3x_1$$
$$-6u_3^2x_5^2x_4^2x_1^2 + 2u_3x_5^2x_4x_3^2x_1^2$$
$$-2u_3x_5^2x_4x_3x_2^2x_1 + 4u_3^2x_5^2x_4x_3x_2x_1$$
$$-2u_3x_5^2x_4x_3x_1^3 - 2u_3^3x_5^2x_4x_3x_1 +$$

$$2u_3^3x_5^2x_4x_1^2 + x_5^2x_3^4x_1^2$$
$$-2x_5^2x_3^3x_2^2x_1 - 2u_3x_5^2x_3^3x_2x_1$$
$$-2x_5^2x_3^3x_1^3 + 4u_3^2x_5^2x_3^3x_1 + x_5^2x_3^2x_2^4 +$$
$$2u_3x_5^2x_3^2x_2^3 + 2x_5^2x_3^2x_2^2x_1^2$$
$$-6u_3^2x_5^2x_3^2x_2^2 + 2u_3x_5^2x_3^2x_2x_1^2 +$$
$$2u_3^3x_5^2x_3^2x_2 + x_5^2x_3^2x_1^4$$
$$-8u_3^2x_5^2x_3^2x_1^2 + u_3^4x_5^2x_3^2 +$$
$$4u_3^2x_5^2x_3x_2^2x_1 - 2u_3^3x_5^2x_3x_2x_1 +$$
$$4u_3^2x_5^2x_3x_1^3 - 2u_3^4x_5^2x_3x_1 +$$
$$2u_3^4x_5^2x_1^2 - 2u_3x_5x_4^4x_1^2 +$$
$$2u_3^2x_5x_4^3x_1^2 - 4u_3x_5x_4^2x_3^2x_1^2 +$$
$$4u_3x_5x_4^2x_3x_2^2x_1 - 2u_3^2x_5x_4^2x_3x_2x_1 +$$
$$4u_3x_5x_4^2x_3x_1^3 - 2u_3^3x_5x_4^2x_3x_1 +$$
$$2u_3^3x_5x_4^2x_1^2 + 2u_3^2x_5x_4x_3^2x_1^2$$
$$-2u_3^2x_5x_4x_3x_2^2x_1 - 2u_3^2x_5x_4x_3x_1^3 +$$
$$2u_3^4x_5x_4x_3x_1 - 2u_3^4x_5x_4x_1^2 - 2u_3x_5x_3^4x_1^2 +$$
$$4u_3x_5x_3^3x_2^2x_1 - 2u_3^2x_5x_3^3x_2x_1 +$$
$$4u_3x_5x_3^3x_1^3 - 2u_3^3x_5x_3^3x_1 - 2u_3x_5x_3^2x_2^4 +$$
$$2u_3^2x_5x_3^2x_2^3 - 4u_3x_5x_3^2x_2^2x_1^2 +$$
$$2u_3^3x_5x_3^2x_2^2 + 2u_3^2x_5x_3^2x_2x_1^2$$
$$-2u_3^4x_5x_3^2x_2 - 2u_3x_5x_3^2x_1^4 +$$
$$4u_3^3x_5x_3^2x_1^2 - 2u_3^3x_5x_3x_2^2x_1 +$$
$$2u_3^4x_5x_3x_2x_1 - 2u_3^3x_5x_3x_1^3 + u_3^2x_4^4x_1^2$$
$$-2u_3^3x_4^3x_1^2 + 2u_3^2x_4^2x_3^2x_1^2$$
$$-2u_3^2x_4^2x_3x_2^2x_1 + 2u_3^3x_4^2x_3x_2x_1$$
$$-2u_3^2x_4^2x_3x_1^3 + u_3^4x_4^2x_1^2$$
$$-2u_3^3x_4x_3^2x_1^2 + 2u_3^3x_4x_3x_2^2x_1$$
$$-2u_3^4x_4x_3x_2x_1 + 2u_3^3x_4x_3x_1^3 + u_3^2x_3^4x_1^2$$
$$-2u_3^2x_3^3x_2^2x_1 + 2u_3^3x_3^3x_2x_1$$
$$-2u_3^2x_3^3x_1^3 + u_3^2x_3^2x_2^4 - 2u_3^3x_3^2x_2^3 +$$
$$2u_3^2x_3^2x_2^2x_1^2 + u_3^4x_3^2x_2^2$$
$$-2u_3^3x_3^2x_2x_1^2 + u_3^2x_3^2x_1^4$$

3. Pseudo remainder with p_7 over variable x_7:

$$
\begin{aligned}
g &= 0.0625x_6^4x_5^2x_2^4x_1^2 + 0.125x_6^4x_5^2x_2^2x_1^4 + \\
&\quad 0.0625x_6^4x_5^2x_1^6 - 0.125u_3x_6^4x_5x_2^4x_1^2 \\
&\quad -0.25u_3x_6^4x_5x_2^2x_1^4 - 0.125u_3x_6^4x_5x_1^6 + \\
&\quad 0.0625u_3^2x_6^4x_2^4x_1^2 + 0.125u_3^2x_6^4x_2^2x_1^4 + \\
&\quad 0.0625u_3^2x_6^4x_1^6 - 0.25u_3x_6^3x_5^3x_2^2x_1^3
\end{aligned}
$$

$$-0.25u_3x_6^3x_5^3x_1^5 - 0.25x_6^3x_5^2x_2^4x_1^3$$
$$-0.5x_6^3x_5^2x_2^2x_1^5 + 0.5u_3^2x_6^3x_5^2x_2^2x_1^3$$
$$-0.25x_6^3x_5^2x_1^7 + 0.5u_3^2x_6^3x_5^2x_1^5 +$$
$$0.5u_3x_6^3x_5x_2^4x_1^3 + u_3x_6^3x_5x_2^2x_1^5$$
$$-0.25u_3^3x_6^3x_5x_2^2x_1^3 + 0.5u_3x_6^3x_5x_1^7$$
$$-0.25u_3^3x_6^3x_5x_1^5 - 0.25u_3^2x_6^3x_2^4x_1^3$$
$$-0.5u_3^2x_6^3x_2^2x_1^5 - 0.25u_3^2x_6^3x_1^7 +$$
$$0.25u_3^2x_6^2x_5^4x_1^4 + u_3x_6^2x_5^3x_2^2x_1^4 +$$
$$u_3x_6^2x_5^3x_1^6 - 0.5u_3^3x_6^2x_5^3x_1^4 +$$
$$0.25x_6^2x_5^2x_2^4x_1^4 + 0.5x_6^2x_5^2x_2^2x_1^6$$
$$-2u_3^2x_6^2x_5^2x_2^2x_1^4 + 0.25x_6^2x_5^2x_1^8$$
$$-2u_3^2x_6^2x_5^2x_1^6 + 0.25u_3^4x_6^2x_5^2x_1^4$$
$$-0.5u_3x_6^2x_5x_2^4x_1^4 - u_3x_6^2x_5x_2^2x_1^6 +$$
$$u_3^3x_6^2x_5x_2^2x_1^4 - 0.5u_3x_6^2x_5x_1^8 +$$
$$u_3^3x_6^2x_5x_1^6 + 0.25u_3^2x_6^2x_2^4x_1^4 +$$
$$0.5u_3^2x_6^2x_2^2x_1^6 + 0.25u_3^2x_6^2x_1^8$$
$$-u_3^2x_6x_5^4x_1^5 - u_3x_6x_5^3x_2^2x_1^5$$
$$-u_3x_6x_5^3x_1^7 + 2u_3^3x_6x_5^3x_1^5 +$$
$$2u_3^2x_6x_5^2x_2^2x_1^5 + 2u_3^2x_6x_5^2x_1^7$$
$$-u_3^4x_6x_5^2x_1^5 - u_3^3x_6x_5x_2^2x_1^5$$
$$-u_3^3x_6x_5x_1^7 + x_5^4x_4^2x_1^6$$
$$-2x_5^4x_4x_3x_2x_1^5 + 2u_3x_5^4x_4x_3x_1^5$$
$$-2u_3x_5^4x_4x_1^6 + x_5^4x_3^2x_2^2x_1^4$$
$$-2u_3x_5^4x_3^2x_2x_1^4 + u_3^2x_5^4x_3^2x_1^4 +$$
$$2u_3x_5^4x_3x_2x_1^5 - 2u_3^2x_5^4x_3x_1^5 +$$
$$2u_3^2x_5^4x_1^6 - 2x_5^3x_4^3x_1^6 +$$
$$2x_5^3x_4^2x_3x_2x_1^5 - 2u_3x_5^3x_4^2x_3x_1^5 +$$
$$2u_3x_5^3x_4^2x_1^6 - 2x_5^3x_4x_3^2x_1^6 +$$
$$2x_5^3x_4x_3x_2^2x_1^5 + 2x_5^3x_4x_3x_1^7$$
$$-2u_3^2x_5^3x_4x_3x_1^5 + 2u_3^2x_5^3x_4x_1^6 +$$
$$2x_5^3x_3^3x_2x_1^5 - 2u_3x_5^3x_3^3x_1^5$$
$$-2x_5^3x_3^2x_2^3x_1^4 + 2u_3x_5^3x_3^2x_2^2x_1^4$$
$$-2x_5^3x_3^2x_2x_1^6 + 2u_3^2x_5^3x_3^2x_2x_1^4 +$$
$$4u_3x_5^3x_3^2x_1^6 - 2u_3^3x_5^3x_3^2x_1^4$$
$$-2u_3x_5^3x_3x_2^2x_1^5 - 2u_3^2x_5^3x_3x_2x_1^5$$
$$-2u_3x_5^3x_3x_1^7 + 4u_3^3x_5^3x_3x_1^5$$
$$-4u_3^3x_5^3x_1^6 + x_5^2x_4^4x_1^6 + 2u_3x_5^2x_4^3x_1^6 +$$
$$2x_5^2x_4^2x_3^2x_1^6 - 2x_5^2x_4^2x_3x_2^2x_1^5$$
$$-2u_3x_5^2x_4^2x_3x_2x_1^5 - 2x_5^2x_4^2x_3x_1^7 +$$
$$4u_3^2x_5^2x_4^2x_3x_1^5 - 6u_3^2x_5^2x_4^2x_1^6 +$$

$$2u_3 x_5^2 x_4 x_3^2 x_1^6 - 2u_3 x_5^2 x_4 x_3 x_2^2 x_1^5 +$$
$$4u_3^2 x_5^2 x_4 x_3 x_2 x_1^5 - 2u_3 x_5^2 x_4 x_3 x_1^7$$
$$-2u_3^3 x_5^2 x_4 x_3 x_1^5 + 2u_3^3 x_5^2 x_4 x_1^6 +$$
$$x_5^2 x_3^4 x_1^6 - 2x_5^2 x_3^3 x_2^2 x_1^5$$
$$-2u_3 x_5^2 x_3^3 x_2 x_1^5 - 2x_5^2 x_3^3 x_1^7 +$$
$$4u_3^2 x_5^2 x_3^3 x_1^5 + x_5^2 x_3^2 x_2^4 x_1^4 +$$
$$2u_3 x_5^2 x_3^2 x_2^3 x_1^4 + 2x_5^2 x_3^2 x_2^2 x_1^6$$
$$-6u_3^2 x_5^2 x_3^2 x_2^2 x_1^4 + 2u_3 x_5^2 x_3^2 x_2 x_1^6 +$$
$$2u_3^3 x_5^2 x_3^2 x_2 x_1^4 + x_5^2 x_3^2 x_1^8$$
$$-8u_3^2 x_5^2 x_3^2 x_1^6 + u_3^4 x_5^2 x_3^2 x_1^4 +$$
$$4u_3^2 x_5^2 x_3 x_2^2 x_1^5 - 2u_3^3 x_5^2 x_3 x_2 x_1^5 +$$
$$4u_3^2 x_5^2 x_3 x_1^7 - 2u_3^4 x_5^2 x_3 x_1^5 +$$
$$2u_3^4 x_5^2 x_1^6 - 2u_3 x_5 x_4^4 x_1^6 +$$
$$2u_3^2 x_5 x_4^3 x_1^6 - 4u_3 x_5 x_4^2 x_3^2 x_1^6 +$$
$$4u_3 x_5 x_4^2 x_3 x_2^2 x_1^5 - 2u_3^2 x_5 x_4^2 x_3 x_2 x_1^5 +$$
$$4u_3 x_5 x_4^2 x_3 x_1^7 - 2u_3^3 x_5 x_4^2 x_3 x_1^5 +$$
$$2u_3^3 x_5 x_4^2 x_1^6 + 2u_3^2 x_5 x_4 x_3^2 x_1^6$$
$$-2u_3^2 x_5 x_4 x_3 x_2^2 x_1^5 - 2u_3^2 x_5 x_4 x_3 x_1^7 +$$
$$2u_3^4 x_5 x_4 x_3 x_1^5 - 2u_3^4 x_5 x_4 x_1^6$$
$$-2u_3 x_5 x_3^4 x_1^6 + 4u_3 x_5 x_3^3 x_2^2 x_1^5$$
$$-2u_3^2 x_5 x_3^3 x_2 x_1^5 + 4u_3 x_5 x_3^3 x_1^7$$
$$-2u_3^3 x_5 x_3^3 x_1^5 - 2u_3 x_5 x_3^2 x_2^4 x_1^4 +$$
$$2u_3^2 x_5 x_3^2 x_2^3 x_1^4 - 4u_3 x_5 x_3^2 x_2^2 x_1^6 +$$
$$2u_3^3 x_5 x_3^2 x_2^2 x_1^4 + 2u_3^2 x_5 x_3^2 x_2 x_1^6$$
$$-2u_3^4 x_5 x_3^2 x_2 x_1^4 - 2u_3 x_5 x_3^2 x_1^8 +$$
$$4u_3^3 x_5 x_3^2 x_1^6 - 2u_3^3 x_5 x_3 x_2^2 x_1^5 +$$
$$2u_3^4 x_5 x_3 x_2 x_1^5 - 2u_3^3 x_5 x_3 x_1^7 +$$
$$u_3^2 x_4^4 x_1^6 - 2u_3^3 x_4^3 x_1^6 +$$
$$2u_3^2 x_4^2 x_3^2 x_1^6 - 2u_3^2 x_4^2 x_3 x_2^2 x_1^5 +$$
$$2u_3^3 x_4^2 x_3 x_2 x_1^5 - 2u_3^2 x_4^2 x_3 x_1^7 +$$
$$u_3^4 x_4^2 x_1^6 - 2u_3^3 x_4 x_3^2 x_1^6 +$$
$$2u_3^3 x_4 x_3 x_2^2 x_1^5 - 2u_3^4 x_4 x_3 x_2 x_1^5 +$$
$$2u_3^3 x_4 x_3 x_1^7 + u_3^2 x_3^4 x_1^6$$
$$-2u_3^2 x_3^3 x_2^2 x_1^5 + 2u_3^3 x_3^3 x_2 x_1^5$$
$$-2u_3^2 x_3^3 x_1^7 + u_3^2 x_3^2 x_2^4 x_1^4$$
$$-2u_3^3 x_3^2 x_2^3 x_1^4 + 2u_3^2 x_3^2 x_2^2 x_1^6 +$$
$$u_3^4 x_3^2 x_2^2 x_1^4 - 2u_3^3 x_3^2 x_2 x_1^6 +$$
$$u_3^2 x_3^2 x_1^8$$

4. Pseudo remainder with p_6 over variable x_6:

5. Pseudo remainder with p_5 over variable x_5:

$$
\begin{aligned}
g \;=\;& (u_3^2 - u_3 u_1 + 0.25 u_1^2)x_4^8 x_1^{10} + \\
& (-4u_3^2 + 4u_3 u_1 - u_1^2)x_4^7 x_3 x_2 x_1^9 + \\
& (-2u_3^3 - 3u_3^2 u_1 + 4.5 u_3 u_1^2 - 1.25 u_1^3)x_4^7 x_1^{10} + \\
& (6u_3^2 - 6u_3 u_1 + 1.5 u_1^2)x_4^6 x_3^2 x_2^2 x_1^8 + \\
& (2u_3^2 - 2u_3 u_1 + 0.5 u_1^2)x_4^6 x_3^2 x_1^{10} + \\
& (-2u_3^2 + 2u_3 u_1 - 0.5 u_1^2)x_4^6 x_3 x_2^2 x_1^9 + \\
& (10u_3^3 + 7u_3^2 u_1 - 14.5 u_3 u_1^2 + 4.25 u_1^3)x_4^6 x_3 x_2 x_1^9 + \\
& (-2u_3^2 + 2u_3 u_1 - 0.5 u_1^2)x_4^6 x_3 x_1^{11} + \\
& (-u_3^3 u_1 + u_3^2 u_1^2 - 0.25 u_3 u_1^3)x_4^6 x_3 x_1^9 + \\
& (u_3^4 + 9u_3^3 u_1 + 0.5 u_3^2 u_1^2 - 7.75 u_3 u_1^3 + 2.5625 u_1^4) \\
& x_4^6 x_1^{10} \\
& + (-4u_3^2 + 4u_3 u_1 - u_1^2)x_4^5 x_3^3 x_2^3 x_1^7 + \\
& (-8u_3^2 + 8u_3 u_1 - 2u_1^2)x_4^5 x_3^3 x_2 x_1^9 + \\
& (8u_3^2 - 8u_3 u_1 + 2u_1^2)x_4^5 x_3^2 x_2^3 x_1^8 + \\
& (-20u_3^3 - 2u_3^2 u_1 + 17 u_3 u_1^2 - 5.5 u_1^3) \\
& x_4^5 x_3^2 x_2^2 x_1^8 \\
& + (8u_3^2 - 8u_3 u_1 + 2u_1^2)x_4^5 x_3^2 x_2 x_1^{10} + \\
& (4u_3^3 u_1 - 4u_3^2 u_1^2 + u_3 u_1^3)x_4^5 x_3^2 x_2 x_1^8 + \\
& (-2u_3^3 - 7u_3^2 u_1 + 8.5 u_3 u_1^2 - 2.25 u_1^3)x_4^5 x_3^2 x_1^{10} + \\
& (2u_3^3 + 7u_3^2 u_1 - 8.5 u_3 u_1^2 + 2.25 u_1^3) \\
& x_4^5 x_3 x_2^2 x_1^9 \\
& + \\
& (-6u_3^4 - 36u_3^3 u_1 + 11 u_3^2 u_1^2 + 19 u_3 u_1^3 - 7.375 u_1^4) \\
& x_4^5 x_3 x_2 x_1^9 \\
& + (2u_3^3 + 7u_3^2 u_1 - 8.5 u_3 u_1^2 + 2.25 u_1^3)x_4^5 x_3 x_1^{11} + \\
& (u_3^4 u_1 + 3.5 u_3^3 u_1^2 - 4.25 u_3^2 u_1^3 + 1.125 u_3 u_1^4) \\
& x_4^5 x_3 x_1^9 \\
& + \\
& (-5u_3^4 u_1 - 15.5 u_3^3 u_1^2 + 8.25 u_3^2 u_1^3 + 5.875 u_3 u_1^4 \\
& -2.75 u_1^5) \\
& x_4^5 x_1^{10} \\
& + (u_3^2 - u_3 u_1 + 0.25 u_1^2)x_4^4 x_3^4 x_2^4 x_1^6 + \\
& (12u_3^2 - 12u_3 u_1 + 3u_1^2)x_4^4 x_3^4 x_2^2 x_1^8 + \\
& (u_3^2 - u_3 u_1 + 0.25 u_1^2)x_4^4 x_3^4 x_1^{10} + \\
& (-12u_3^2 + 12u_3 u_1 - 3u_1^2)x_4^4 x_3^3 x_2^4 x_1^7 + \\
& (20u_3^3 - 6u_3^2 u_1 - 9u_3 u_1^2 + 3.5 u_1^3)
\end{aligned}
$$

$$x_4^4 x_3^3 x_2^3 x_1^7$$

$$+(-14u_3^2 + 14u_3u_1 - 3.5u_1^2)x_4^4 x_3^3 x_2^2 x_1^9 +$$

$$(-6u_3^3 u_1 + 6u_3^2 u_1^2 - 1.5u_3 u_1^3)$$

$$x_4^4 x_3^3 x_2^2 x_1^7$$

$$+$$

$$(10u_3^3 + 19u_3^2 u_1 - 26.5u_3 u_1^2 + 7.25u_1^3)$$

$$x_4^4 x_3^3 x_2 x_1^9$$

$$+(-2u_3^2 + 2u_3u_1 - 0.5u_1^2)x_4^4 x_3^3 x_1^{11} +$$

$$(-u_3^3 u_1 + u_3^2 u_1^2 - 0.25u_3 u_1^3)x_4^4 x_3^3 x_1^9 +$$

$$(u_3^2 - u_3 u_1 + 0.25u_1^2)x_4^4 x_3^2 x_2^4 x_1^8 +$$

$$(-10u_3^3 - 19u_3^2 u_1 + 26.5u_3 u_1^2 - 7.25u_1^3)$$

$$x_4^4 x_3^2 x_2^3 x_1^8$$

$$+(2u_3^2 - 2u_3 u_1 + 0.5u_1^2)x_4^4 x_3^2 x_2^2 x_1^{10} +$$

$$(15u_3^4 + 55u_3^3 u_1 - 32.5u_3^2 u_1^2 - 16.25u_3 u_1^3 + 8.4375u_1^4)$$

$$x_4^4 x_3^2 x_2^2 x_1^8$$

$$+$$

$$(-10u_3^3 - 19u_3^2 u_1 + 26.5u_3 u_1^2 - 7.25u_1^3)$$

$$x_4^4 x_3^2 x_2 x_1^{10}$$

$$+$$

$$(-5u_3^4 u_1 - 9.5u_3^3 u_1^2 + 13.25u_3^2 u_1^3 - 3.625u_3 u_1^4)$$

$$x_4^4 x_3^2 x_2 x_1^8$$

$$+(u_3^2 - u_3 u_1 + 0.25u_1^2)x_4^4 x_3^2 x_1^{12} +$$

$$(10u_3^3 u_1 + 6u_3^2 u_1^2 - 13.5u_3 u_1^3 + 4u_1^4)$$

$$x_4^4 x_3^2 x_1^{10}$$

$$+$$

$$(0.25u_3^4 u_1^2 - 0.25u_3^3 u_1^3 + 0.0625u_3^2 u_1^4)$$

$$x_4^4 x_3^2 x_1^8$$

$$+$$

$$(-9u_3^3 u_1 - 7u_3^2 u_1^2 + 13.75u_3 u_1^3 - 4u_1^4)$$

$$x_4^4 x_3 x_2^2 x_1^9$$

$$+$$

$$(25u_3^4 u_1 + 45.5u_3^3 u_1^2 - 37.25u_3^2 u_1^3 - 9.375u_3 u_1^4 +$$

$$6.75u_1^5)$$

$$x_4^4 x_3 x_2 x_1^9$$

$$+$$

$$(-9u_3^3 u_1 - 7u_3^2 u_1^2 + 13.75u_3 u_1^3 - 4u_1^4)$$

$$x_4^4 x_3 x_1^{11}$$

$$+$$

$$(-4.5u_3^4 u_1^2 - 3.5u_3^3 u_1^3 + 6.875u_3^2 u_1^4 - 2u_3 u_1^5)$$

$$x_4^4 x_3 x_1^9$$

$+$

$(10.5u_3^4u_1^2 + 11.5u_3^3u_1^3 - 12.875u_3^2u_1^4 - u_3u_1^5 + 1.625u_1^6)$

$x_4^4x_1^{10}$

$+(-8u_3^2 + 8u_3u_1 - 2u_1^2)x_4^3x_3^5x_2^3x_1^7 +$

$(-4u_3^2 + 4u_3u_1 - u_1^2)x_4^3x_3^5x_2x_1^9 +$

$(8u_3^2 - 8u_3u_1 + 2u_1^2)x_4^3x_3^4x_2^5x_1^6 +$

$(-10u_3^3 + 5u_3^2u_1 + 2.5u_3u_1^2 - 1.25u_1^3)$

$x_4^3x_3^4x_2^4x_1^6$

$+(16u_3^2 - 16u_3u_1 + 4u_1^2)x_4^3x_3^4x_2^3x_1^8 +$

$(4u_3^3u_1 - 4u_3^2u_1^2 + u_3u_1^3)x_4^3x_3^4x_2^3x_1^6 +$

$(-20u_3^3 - 14u_3^2u_1 + 29u_3u_1^2 - 8.5u_1^3)$

$x_4^3x_3^4x_2^2x_1^8$

$+(8u_3^2 - 8u_3u_1 + 2u_1^2)x_4^3x_3^4x_2x_1^{10} +$

$(4u_3^3u_1 - 4u_3^2u_1^2 + u_3u_1^3)x_4^3x_3^4x_2x_1^8 +$

$(-4u_3^2u_1 + 4u_3u_1^2 - u_1^3)x_4^3x_3^4x_1^{10} +$

$(-4u_3^2 + 4u_3u_1 - u_1^2)x_4^3x_3^3x_2^5x_1^7 +$

$(20u_3^3 + 14u_3^2u_1 - 29u_3u_1^2 + 8.5u_1^3)$

$x_4^3x_3^3x_2^4x_1^7$

$+(-8u_3^2 + 8u_3u_1 - 2u_1^2)x_4^3x_3^3x_2^3x_1^9 +$

$(-20u_3^4 - 40u_3^3u_1 + 34u_3^2u_1^2 + 6u_3u_1^3 - 5.25u_1^4)$

$x_4^3x_3^3x_2^3x_1^7$

$+$

$(20u_3^3 + 22u_3^2u_1 - 37u_3u_1^2 + 10.5u_1^3)$

$x_4^3x_3^3x_2^2x_1^9$

$+$

$(10u_3^4u_1 + 7u_3^3u_1^2 - 14.5u_3^2u_1^3 + 4.25u_3u_1^4)$

$x_4^3x_3^3x_2^2x_1^7$

$+(-4u_3^2 + 4u_3u_1 - u_1^2)x_4^3x_3^3x_2x_1^{11} +$

$(-40u_3^3u_1 + 30u_3u_1^3 - 10u_1^4)x_4^3x_3^3x_2x_1^9 +$

$(-u_3^4u_1^2 + u_3^3u_1^3 - 0.25u_3^2u_1^4)$

$x_4^3x_3^3x_2x_1^7$

$+(8u_3^2u_1 - 8u_3u_1^2 + 2u_1^3)x_4^3x_3^3x_1^{11} +$

$(4u_3^3u_1^2 - 4u_3^2u_1^3 + u_3u_1^4)x_4^3x_3^3x_1^9 +$

$(-4u_3^2u_1 + 4u_3u_1^2 - u_1^3)x_4^3x_3^2x_2^4x_1^8 +$

$(36u_3^3u_1 + 4u_3^2u_1^2 - 31u_3u_1^3 + 10u_1^4)$

$x_4^3x_3^2x_2^3x_1^8$

$+(-8u_3^2u_1 + 8u_3u_1^2 - 2u_1^3)x_4^3x_3^2x_2^2x_1^{10} +$

$(-50u_3^4u_1 - 47u_3^3u_1^2 + 56.5u_3^2u_1^3 + 3.75u_3u_1^4 - 7u_1^5)$

$x_4^3x_3^2x_2^2x_1^8$

$$+$$
$$(36u_3^3u_1 + 4u_3^2u_1^2 - 31u_3u_1^3 + 10u_1^4)$$
$$x_4^3x_3^2x_2x_1^{10}$$
$$+$$
$$(18u_3^4u_1^2 + 2u_3^3u_1^3 - 15.5u_3^2u_1^4 + 5u_3u_1^5)$$
$$x_4^3x_3^2x_2x_1^8$$
$$+(-4u_3^2u_1 + 4u_3u_1^2 - u_1^3)x_4^3x_3^2x_1^{12} +$$
$$(-20u_3^3u_1^2 + 6u_3^2u_1^3 + 9u_3u_1^4 - 3.5u_1^5)$$
$$x_4^3x_3^2x_1^{10}$$
$$+(-u_3^4u_1^3 + u_3^3u_1^4 - 0.25u_3^2u_1^5)x_4^3x_3^2x_1^8 +$$
$$(16.5u_3^3u_1^2 - 2.5u_3^2u_1^3 - 9.875u_3u_1^4 + 3.5u_1^5)$$
$$x_4^3x_3x_2^2x_1^9$$
$$+$$
$$(-42u_3^4u_1^2 - 18u_3^3u_1^3 + 35.5u_3^2u_1^4 - u_3u_1^5$$
$$-3.5u_1^6)$$
$$x_4^3x_3x_2x_1^9$$
$$+$$
$$(16.5u_3^3u_1^2 - 2.5u_3^2u_1^3 - 9.875u_3u_1^4 + 3.5u_1^5)$$
$$x_4^3x_3x_1^{11}$$
$$+$$
$$(8.25u_3^4u_1^3 - 1.25u_3^3u_1^4 - 4.9375u_3^2u_1^5 + 1.75u_3u_1^6)$$
$$x_4^3x_3x_1^9$$
$$+$$
$$(-12u_3^4u_1^3 - u_3^3u_1^4 + 8u_3^2u_1^5 - 1.25u_3u_1^6$$
$$-0.5u_1^7)$$
$$x_4^3x_1^{10}$$
$$+(2u_3^2 - 2u_3u_1 + 0.5u_1^2)x_4^2x_3^6x_2^4x_1^6 +$$
$$(6u_3^2 - 6u_3u_1 + 1.5u_1^2)x_4^2x_3^6x_2^2x_1^8 +$$
$$(-2u_3^2 + 2u_3u_1 - 0.5u_1^2)x_4^2x_3^5x_2^6x_1^5 +$$
$$(2u_3^3 - u_3^2u_1 - 0.5u_3u_1^2 + 0.25u_1^3)$$
$$x_4^2x_3^5x_2^5x_1^5$$
$$+(-14u_3^2 + 14u_3u_1 - 3.5u_1^2)x_4^2x_3^5x_2^4x_1^7 +$$
$$(-u_3^3u_1 + u_3^2u_1^2 - 0.25u_3u_1^3)$$
$$x_4^2x_3^5x_2^4x_1^5$$
$$+$$
$$(20u_3^3 - 2u_3^2u_1 - 13u_3u_1^2 + 4.5u_1^3)$$
$$x_4^2x_3^5x_2^3x_1^7$$
$$+(-12u_3^2 + 12u_3u_1 - 3u_1^2)x_4^2x_3^5x_2^2x_1^9 +$$
$$(-6u_3^3u_1 + 6u_3^2u_1^2 - 1.5u_3u_1^3)$$
$$x_4^2x_3^5x_2^2x_1^7$$

$$+(12u_3^2u_1 - 12u_3u_1^2 + 3u_1^3)x_4^2x_3^5x_2x_1^9 +$$
$$(6u_3^2 - 6u_3u_1 + 1.5u_1^2)x_4^2x_3^4x_2^6x_1^6 +$$
$$(-20u_3^3 + 2u_3^2u_1 + 13u_3u_1^2 - 4.5u_1^3)$$
$$x_4^2x_3^4x_2^5x_1^6$$
$$+(12u_3^2 - 12u_3u_1 + 3u_1^2)x_4^2x_3^4x_2^4x_1^8 +$$
$$(15u_3^4 + 15u_3^3u_1 - 18.5u_3^2u_1^2 - 0.25u_3u_1^3 + 1.9375u_1^4)$$
$$x_4^2x_3^4x_2^4x_1^6$$
$$+$$
$$(-20u_3^3 - 22u_3^2u_1 + 37u_3u_1^2 - 10.5u_1^3)$$
$$x_4^2x_3^4x_2^3x_1^8$$
$$+$$
$$(-10u_3^4u_1 + u_3^3u_1^2 + 6.5u_3^2u_1^3 - 2.25u_3u_1^4)$$
$$x_4^2x_3^4x_2^3x_1^6$$
$$+(6u_3^2 - 6u_3u_1 + 1.5u_1^2)x_4^2x_3^4x_2^2x_1^{10} +$$
$$(60u_3^3u_1 - 24u_3^2u_1^2 - 21u_3u_1^3 + 9u_1^4)$$
$$x_4^2x_3^4x_2^2x_1^8$$
$$+$$
$$(1.5u_3^4u_1^2 - 1.5u_3^3u_1^3 + 0.375u_3^2u_1^4)$$
$$x_4^2x_3^4x_2^2x_1^6$$
$$+(-24u_3^2u_1 + 24u_3u_1^2 - 6u_1^3)x_4^2x_3^4x_2x_1^{10} +$$
$$(-12u_3^3u_1^2 + 12u_3^2u_1^3 - 3u_3u_1^4)$$
$$x_4^2x_3^4x_2x_1^8$$
$$+(6u_3^2u_1^2 - 6u_3u_1^3 + 1.5u_1^4)x_4^2x_3^4x_1^{10} +$$
$$(12u_3^2u_1 - 12u_3u_1^2 + 3u_1^3)x_4^2x_3^3x_2^5x_1^7 +$$
$$(-54u_3^3u_1 + 18u_3^2u_1^2 + 22.5u_3u_1^3 - 9u_1^4)$$
$$x_4^2x_3^3x_2^4x_1^7$$
$$+(24u_3^2u_1 - 24u_3u_1^2 + 6u_1^3)x_4^2x_3^3x_2^3x_1^9 +$$
$$(50u_3^4u_1 + 23u_3^3u_1^2 - 44.5u_3^2u_1^3 + 2.25u_3u_1^4 + 4u_1^5)$$
$$x_4^2x_3^3x_2^3x_1^7$$
$$+$$
$$(-54u_3^3u_1 + 6u_3^2u_1^2 + 34.5u_3u_1^3 - 12u_1^4)$$
$$x_4^2x_3^3x_2^2x_1^9$$
$$+$$
$$(-27u_3^4u_1^2 + 9u_3^3u_1^3 + 11.25u_3^2u_1^4 - 4.5u_3u_1^5)$$
$$x_4^2x_3^3x_2^2x_1^7$$
$$+(12u_3^2u_1 - 12u_3u_1^2 + 3u_1^3)x_4^2x_3^3x_2x_1^{11} +$$
$$(60u_3^3u_1^2 - 34u_3^2u_1^3 - 11u_3u_1^4 + 6.5u_1^5)$$
$$x_4^2x_3^3x_2x_1^9$$
$$+$$
$$(3u_3^4u_1^3 - 3u_3^3u_1^4 + 0.75u_3^2u_1^5)$$

$$x_4^2 x_3^3 x_2 x_1^7$$
$$+(-12u_3^2 u_1^2 + 12u_3 u_1^3 - 3u_1^4)x_4^2 x_3^3 x_1^{11} +$$
$$(-6u_3^3 u_1^3 + 6u_3^2 u_1^4 - 1.5u_3 u_1^5)x_4^2 x_3^3 x_1^9 +$$
$$(6.25u_3^2 u_1^2 - 6.25u_3 u_1^3 + 1.5625u_1^4)$$
$$x_4^2 x_3^2 x_2^4 x_1^8$$
$$+$$
$$(-49.5u_3^3 u_1^2 + 23.5u_3^2 u_1^3 + 13.625u_3 u_1^4 - 6.5u_1^5)$$
$$x_4^2 x_3^2 x_2^3 x_1^8$$
$$+$$
$$(12.5u_3^2 u_1^2 - 12.5u_3 u_1^3 + 3.125u_1^4)$$
$$x_4^2 x_3^2 x_2^2 x_1^{10}$$
$$+$$
$$(63u_3^4 u_1^2 + 5.5u_3^3 u_1^3 - 39.75u_3^2 u_1^4 + 4.125u_3 u_1^5 +$$
$$3.25u_1^6)$$
$$x_4^2 x_3^2 x_2^2 x_1^8$$
$$+$$
$$(-49.5u_3^3 u_1^2 + 23.5u_3^2 u_1^3 + 13.625u_3 u_1^4 - 6.5u_1^5)$$
$$x_4^2 x_3^2 x_2 x_1^{10}$$
$$+$$
$$(-24.75u_3^4 u_1^3 + 11.75u_3^3 u_1^4 + 6.8125u_3^2 u_1^5 - 3.25u_3 u_1^6)$$
$$x_4^2 x_3^2 x_2 x_1^8$$
$$+(6.25u_3^2 u_1^2 - 6.25u_3 u_1^3 + 1.5625u_1^4)x_4^2 x_3^2 x_1^{12} +$$
$$(20.5u_3^3 u_1^3 - 14.5u_3^2 u_1^4 - 0.875u_3 u_1^5 + 1.5u_1^6)$$
$$x_4^2 x_3^2 x_1^{10}$$
$$+$$
$$(1.5625u_3^4 u_1^4 - 1.5625u_3^3 u_1^5 + 0.390625u_3^2 u_1^6)$$
$$x_4^2 x_3^2 x_1^8$$
$$+$$
$$(-15.5u_3^3 u_1^3 + 9.5u_3^2 u_1^4 + 2.125u_3 u_1^5 - 1.5u_1^6)$$
$$x_4^2 x_3 x_2^2 x_1^9$$
$$+$$
$$(36u_3^4 u_1^3 - 9u_3^3 u_1^4 - 14u_3^2 u_1^5 + 2.75u_3 u_1^6 + u_1^7)$$
$$x_4^2 x_3 x_2 x_1^9$$
$$+$$
$$(-15.5u_3^3 u_1^3 + 9.5u_3^2 u_1^4 + 2.125u_3 u_1^5 - 1.5u_1^6)$$
$$x_4^2 x_3 x_1^{11}$$
$$+$$
$$(-7.75u_3^4 u_1^4 + 4.75u_3^3 u_1^5 + 1.0625u_3^2 u_1^6 - 0.75u_3 u_1^7)$$
$$x_4^2 x_3 x_1^9$$
$$+$$

$(8u_3^4u_1^4 - 4u_3^3u_1^5 - 1.75u_3^2u_1^6 + 0.75u_3u_1^7 +$
$0.0625u_1^8)$
$x_4^2x_1^{10}$
$+(-4u_3^2 + 4u_3u_1 - u_1^2)x_4x_3^7x_2^3x_1^7 +$
$(8u_3^2 - 8u_3u_1 + 2u_1^2)x_4x_3^6x_2^5x_1^6 +$
$(-10u_3^3 + 5u_3^2u_1 + 2.5u_3u_1^2 - 1.25u_1^3)$
$x_4x_3^6x_2^4x_1^6$
$+(8u_3^2 - 8u_3u_1 + 2u_1^2)x_4x_3^6x_2^3x_1^8 +$
$(4u_3^3u_1 - 4u_3^2u_1^2 + u_3u_1^3)x_4x_3^6x_2^3x_1^6 +$
$(-12u_3^2u_1 + 12u_3u_1^2 - 3u_1^3)x_4x_3^6x_2^2x_1^8 +$
$(-4u_3^2 + 4u_3u_1 - u_1^2)x_4x_3^5x_2^7x_1^5 +$
$(10u_3^3 - 5u_3^2u_1 - 2.5u_3u_1^2 + 1.25u_1^3)$
$x_4x_3^5x_2^6x_1^5$
$+(-8u_3^2 + 8u_3u_1 - 2u_1^2)x_4x_3^5x_2^5x_1^7 +$
$(-6u_3^4 - 4u_3^3u_1 + 7u_3^2u_1^2 - u_3u_1^3 - 0.375u_1^4)$
$x_4x_3^5x_2^5x_1^5$
$+$
$(10u_3^3 + 19u_3^2u_1 - 26.5u_3u_1^2 + 7.25u_1^3)$
$x_4x_3^5x_2^4x_1^7$
$+$
$(5u_3^4u_1 - 2.5u_3^3u_1^2 - 1.25u_3^2u_1^3 + 0.625u_3u_1^4)$
$x_4x_3^5x_2^4x_1^5$
$+(-4u_3^2 + 4u_3u_1 - u_1^2)x_4x_3^5x_2^3x_1^9 +$
$(-40u_3^3u_1 + 24u_3^2u_1^2 + 6u_3u_1^3 - 4u_1^4)$
$x_4x_3^5x_2^3x_1^7$
$+$
$(-u_3^4u_1^2 + u_3^3u_1^3 - 0.25u_3^2u_1^4)$
$x_4x_3^5x_2^3x_1^5$
$+(24u_3^2u_1 - 24u_3u_1^2 + 6u_1^3)x_4x_3^5x_2^2x_1^9 +$
$(12u_3^3u_1^2 - 12u_3^2u_1^3 + 3u_3u_1^4)$
$x_4x_3^5x_2^2x_1^7$
$+(-12u_3^2u_1^2 + 12u_3u_1^3 - 3u_1^4)x_4x_3^5x_2x_1^9 +$
$(-12u_3^2u_1 + 12u_3u_1^2 - 3u_1^3)x_4x_3^4x_2^6x_1^6 +$
$(36u_3^3u_1 - 20u_3^2u_1^2 - 7u_3u_1^3 + 4u_1^4)$
$x_4x_3^4x_2^5x_1^6$
$+(-24u_3^2u_1 + 24u_3u_1^2 - 6u_1^3)x_4x_3^4x_2^4x_1^8 +$
$(-25u_3^4u_1 - 9.5u_3^3u_1^2 + 23.25u_3^2u_1^3 - 3.625u_3u_1^4$
$-1.25u_1^5)$
$x_4x_3^4x_2^4x_1^6$
$+$

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$$(36u_3^3u_1 + 4u_3^2u_1^2 - 31u_3u_1^3 + 10u_1^4)$$
$$x_4x_3^4x_2^3x_1^8$$
$$+$$
$$(18u_3^4u_1^2 - 10u_3^3u_1^3 - 3.5u_3^2u_1^4 + 2u_3u_1^5)$$
$$x_4x_3^4x_2^3x_1^6$$
$$+(-12u_3^2u_1 + 12u_3u_1^2 - 3u_1^3)x_4x_3^4x_2^2x_1^{10} +$$
$$(-60u_3^3u_1^2 + 42u_3^2u_1^3 + 3u_3u_1^4 - 4.5u_1^5)$$
$$x_4x_3^4x_2^2x_1^8$$
$$+$$
$$(-3u_3^4u_1^3 + 3u_3^3u_1^4 - 0.75u_3^2u_1^5)$$
$$x_4x_3^4x_2^2x_1^6$$
$$+(24u_3^2u_1^2 - 24u_3u_1^3 + 6u_1^4)x_4x_3^4x_2x_1^{10} +$$
$$(12u_3^3u_1^3 - 12u_3^2u_1^4 + 3u_3u_1^5)x_4x_3^4x_2x_1^8 +$$
$$(-4u_3^2u_1^3 + 4u_3u_1^4 - u_1^5)x_4x_3^4x_1^{10} +$$
$$(-12.5u_3^2u_1^2 + 12.5u_3u_1^3 - 3.125u_1^4)$$
$$x_4x_3^3x_2^5x_1^7$$
$$+$$
$$(49.5u_3^3u_1^2 - 31.25u_3^2u_1^3 - 5.875u_3u_1^4 + 4.5625u_1^5)$$
$$x_4x_3^3x_2^4x_1^7$$
$$+(-25u_3^2u_1^2 + 25u_3u_1^3 - 6.25u_1^4)x_4x_3^3x_2^3x_1^9 +$$
$$(-42u_3^4u_1^2 - 3u_3^3u_1^3 + 28.5u_3^2u_1^4 - 5.25u_3u_1^5$$
$$-1.5u_1^6)$$
$$x_4x_3^3x_2^3x_1^7$$
$$+$$
$$(49.5u_3^3u_1^2 - 23u_3^2u_1^3 - 14.125u_3u_1^4 + 6.625u_1^5)$$
$$x_4x_3^3x_2^2x_1^9$$
$$+$$
$$(24.75u_3^4u_1^3 - 15.625u_3^3u_1^4 - 2.9375u_3^2u_1^5 +$$
$$2.28125u_3u_1^6)$$
$$x_4x_3^3x_2^2x_1^7$$
$$+(-12.5u_3^2u_1^2 + 12.5u_3u_1^3 - 3.125u_1^4)x_4x_3^3x_2x_1^{11} +$$
$$(-41u_3^3u_1^3 + 33u_3^2u_1^4 - 2.25u_3u_1^5 - 2u_1^6)$$
$$x_4x_3^3x_2x_1^9$$
$$+$$
$$(-3.125u_3^4u_1^4 + 3.125u_3^3u_1^5 - 0.78125u_3^2u_1^6)$$
$$x_4x_3^3x_2x_1^7$$
$$+(8.25u_3^2u_1^3 - 8.25u_3u_1^4 + 2.0625u_1^5)x_4x_3^3x_1^{11} +$$
$$(4.125u_3^3u_1^4 - 4.125u_3^2u_1^5 + 1.03125u_3u_1^6)$$
$$x_4x_3^3x_1^9$$
$$+(-4.5u_3^2u_1^3 + 4.5u_3u_1^4 - 1.125u_1^5)x_4x_3^2x_2^4x_1^8 +$$

$(31u_3^3u_1^3 - 23u_3^2u_1^4 - 0.25u_3u_1^5 + 2u_1^6)$
$x_4x_3^2x_2^3x_1^8$
$+(-9u_3^2u_1^3 + 9u_3u_1^4 - 2.25u_1^5)x_4x_3^2x_2^2x_1^{10} +$
$(-36u_3^4u_1^3 + 10u_3^3u_1^4 + 14u_3^2u_1^5 - 3.5u_3u_1^6$
$-0.75u_1^7)$
$x_4x_3^2x_2^2x_1^8$
$+$
$(31u_3^3u_1^3 - 23u_3^2u_1^4 - 0.25u_3u_1^5 + 2u_1^6)$
$x_4x_3^2x_2x_1^{10}$
$+$
$(15.5u_3^4u_1^4 - 11.5u_3^3u_1^5 - 0.125u_3^2u_1^6 + u_3u_1^7)$
$x_4x_3^2x_2x_1^8$
$+(-4.5u_3^2u_1^3 + 4.5u_3u_1^4 - 1.125u_1^5)x_4x_3^2x_1^{12} +$
$(-11u_3^3u_1^4 + 10u_3^2u_1^5 - 1.75u_3u_1^6 - 0.25u_1^7)$
$x_4x_3^2x_1^{10}$
$+$
$(-1.125u_3^4u_1^5 + 1.125u_3^3u_1^6 - 0.28125u_3^2u_1^7)$
$x_4x_3^2x_1^8$
$+$
$(7.5u_3^3u_1^4 - 6.5u_3^2u_1^5 + 0.875u_3u_1^6 + 0.25u_1^7)$
$x_4x_3x_2^2x_1^9$
$+$
$(-16u_3^4u_1^4 + 10u_3^3u_1^5 + 1.5u_3^2u_1^6 - u_3u_1^7$
$-0.125u_1^8)$
$x_4x_3x_2x_1^9$
$+$
$(7.5u_3^3u_1^4 - 6.5u_3^2u_1^5 + 0.875u_3u_1^6 + 0.25u_1^7)$
$x_4x_3x_1^{11}$
$+$
$(3.75u_3^4u_1^5 - 3.25u_3^3u_1^6 + 0.4375u_3^2u_1^7 + 0.125u_3u_1^8)$
$x_4x_3x_1^9$
$+$
$(-3u_3^4u_1^5 + 2.5u_3^3u_1^6 - 0.25u_3^2u_1^7 - 0.125u_3u_1^8)$
$x_4x_1^{10}$
$+(u_3^2 - u_3u_1 + 0.25u_1^2)x_3^8x_2^4x_1^6 +$
$(-2u_3^2 + 2u_3u_1 - 0.5u_1^2)x_3^7x_2^6x_1^5 +$
$(2u_3^3 - u_3^2u_1 - 0.5u_3u_1^2 + 0.25u_1^3)x_3^7x_2^5x_1^5 +$
$(-2u_3^2 + 2u_3u_1 - 0.5u_1^2)x_3^7x_2^4x_1^7 +$
$(-u_3^3u_1 + u_3^2u_1^2 - 0.25u_3u_1^3)x_3^7x_2^4x_1^5 +$
$(4u_3^2u_1 - 4u_3u_1^2 + u_1^3)x_3^7x_2^3x_1^7 +$

$$(u_3^2 - u_3 u_1 + 0.25 u_1^2) x_3^6 x_2^8 x_1^4 +$$
$$(-2u_3^3 + u_3^2 u_1 + 0.5 u_3 u_1^2 - 0.25 u_1^3) x_3^6 x_2^7 x_1^4 +$$
$$(2u_3^2 - 2u_3 u_1 + 0.5 u_1^2) x_3^6 x_2^6 x_1^6 +$$
$$(u_3^4 + u_3^3 u_1 - 1.5 u_3^2 u_1^2 + 0.25 u_3 u_1^3 + 0.0625 u_1^4)$$
$$x_3^6 x_2^6 x_1^4$$
$$+(-2u_3^3 - 7u_3^2 u_1 + 8.5 u_3 u_1^2 - 2.25 u_1^3) x_3^6 x_2^5 x_1^6 +$$
$$(-u_3^4 u_1 + 0.5 u_3^3 u_1^2 + 0.25 u_3^2 u_1^3 - 0.125 u_3 u_1^4)$$
$$x_3^6 x_2^5 x_1^4$$
$$+(u_3^2 - u_3 u_1 + 0.25 u_1^2) x_3^6 x_2^4 x_1^8 +$$
$$(10 u_3^3 u_1 - 6 u_3^2 u_1^2 - 1.5 u_3 u_1^3 + u_1^4)$$
$$x_3^6 x_2^4 x_1^6$$
$$+$$
$$(0.25 u_3^4 u_1^2 - 0.25 u_3^3 u_1^3 + 0.0625 u_3^2 u_1^4)$$
$$x_3^6 x_2^4 x_1^4$$
$$+(-8 u_3^2 u_1 + 8 u_3 u_1^2 - 2 u_1^3) x_3^6 x_2^3 x_1^8 +$$
$$(-4 u_3^3 u_1^2 + 4 u_3^2 u_1^3 - u_3 u_1^4) x_3^6 x_2^3 x_1^6 +$$
$$(6 u_3^2 u_1^2 - 6 u_3 u_1^3 + 1.5 u_1^4) x_3^6 x_2^2 x_1^8 +$$
$$(4 u_3^2 u_1 - 4 u_3 u_1^2 + u_1^3) x_3^5 x_2^7 x_1^5 +$$
$$(-9 u_3^3 u_1 + 5 u_3^2 u_1^2 + 1.75 u_3 u_1^3 - u_1^4)$$
$$x_3^5 x_2^6 x_1^5$$
$$+(8 u_3^2 u_1 - 8 u_3 u_1^2 + 2 u_1^3) x_3^5 x_2^5 x_1^7 +$$
$$(5 u_3^4 u_1 + 3.5 u_3^3 u_1^2 - 6.25 u_3^2 u_1^3 + 1.125 u_3 u_1^4 +$$
$$0.25 u_1^5)$$
$$x_3^5 x_2^5 x_1^5$$
$$+$$
$$(-9 u_3^3 u_1 - 7 u_3^2 u_1^2 + 13.75 u_3 u_1^3 - 4 u_1^4)$$
$$x_3^5 x_2^4 x_1^7$$
$$+$$
$$(-4.5 u_3^4 u_1^2 + 2.5 u_3^3 u_1^3 + 0.875 u_3^2 u_1^4 - 0.5 u_3 u_1^5)$$
$$x_3^5 x_2^4 x_1^5$$
$$+(4 u_3^2 u_1 - 4 u_3 u_1^2 + u_1^3) x_3^5 x_2^3 x_1^9 +$$
$$(20 u_3^3 u_1^2 - 14 u_3^2 u_1^3 - u_3 u_1^4 + 1.5 u_1^5)$$
$$x_3^5 x_2^3 x_1^7$$
$$+(u_3^4 u_1^3 - u_3^3 u_1^4 + 0.25 u_3^2 u_1^5) x_3^5 x_2^3 x_1^5 +$$
$$(-12 u_3^2 u_1^2 + 12 u_3 u_1^3 - 3 u_1^4) x_3^5 x_2^2 x_1^9 +$$
$$(-6 u_3^3 u_1^3 + 6 u_3^2 u_1^4 - 1.5 u_3 u_1^5) x_3^5 x_2^2 x_1^7 +$$
$$(4 u_3^2 u_1^3 - 4 u_3 u_1^4 + u_1^5) x_3^5 x_2 x_1^9 +$$
$$(6.25 u_3^2 u_1^2 - 6.25 u_3 u_1^3 + 1.5625 u_1^4) x_3^4 x_2^6 x_1^6 +$$
$$(-16.5 u_3^3 u_1^2 + 10.25 u_3^2 u_1^3 + 2.125 u_3 u_1^4 - 1.5625 u_1^5)$$
$$x_3^4 x_2^5 x_1^6$$

$$+(12.5u_3^2u_1^2 - 12.5u_3u_1^3 + 3.125u_1^4)x_3^4x_2^4x_1^8 +$$
$$(10.5u_3^4u_1^2 + 4u_3^3u_1^3 - 10.3125u_3^2u_1^4 + 2.0625u_3u_1^5 +$$
$$0.390625u_1^6)$$
$$x_3^4x_2^4x_1^6$$
$$+$$
$$(-16.5u_3^3u_1^2 + 2u_3^2u_1^3 + 10.375u_3u_1^4 - 3.625u_1^5)$$
$$x_3^4x_2^3x_1^8$$
$$+$$
$$(-8.25u_3^4u_1^3 + 5.125u_3^3u_1^4 + 1.0625u_3^2u_1^5$$
$$-0.78125u_3u_1^6)$$
$$x_3^4x_2^3x_1^6$$
$$+(6.25u_3^2u_1^2 - 6.25u_3u_1^3 + 1.5625u_1^4)x_3^4x_2^2x_1^{10} +$$
$$(20.5u_3^3u_1^3 - 16.375u_3^2u_1^4 + u_3u_1^5 + 1.03125u_1^6)$$
$$x_3^4x_2^2x_1^8$$
$$+$$
$$(1.5625u_3^4u_1^4 - 1.5625u_3^3u_1^5 + 0.390625u_3^2u_1^6)$$
$$x_3^4x_2^2x_1^6$$
$$+(-8.25u_3^2u_1^3 + 8.25u_3u_1^4 - 2.0625u_1^5)x_3^4x_2x_1^{10} +$$
$$(-4.125u_3^3u_1^4 + 4.125u_3^2u_1^5 - 1.03125u_3u_1^6)$$
$$x_3^4x_2x_1^8$$
$$+(1.0625u_3^2u_1^4 - 1.0625u_3u_1^5 + 0.265625u_1^6)x_3^4x_1^{10} +$$
$$(4.5u_3^2u_1^3 - 4.5u_3u_1^4 + 1.125u_1^5)x_3^3x_2^5x_1^7 +$$
$$(-15.5u_3^3u_1^3 + 11.25u_3^2u_1^4 + 0.375u_3u_1^5 - 1.0625u_1^6)$$
$$x_3^3x_2^4x_1^7$$
$$+(9u_3^2u_1^3 - 9u_3u_1^4 + 2.25u_1^5)x_3^3x_2^3x_1^9 +$$
$$(12u_3^4u_1^3 - 8u_3^2u_1^5 + 2u_3u_1^6 + 0.25u_1^7)$$
$$x_3^3x_2^3x_1^7$$
$$+$$
$$(-15.5u_3^3u_1^3 + 9u_3^2u_1^4 + 2.625u_3u_1^5 - 1.625u_1^6)$$
$$x_3^3x_2^2x_1^9$$
$$+$$
$$(-7.75u_3^4u_1^4 + 5.625u_3^3u_1^5 + 0.1875u_3^2u_1^6$$
$$-0.53125u_3u_1^7)$$
$$x_3^3x_2^2x_1^7$$
$$+(4.5u_3^2u_1^3 - 4.5u_3u_1^4 + 1.125u_1^5)x_3^3x_2x_1^{11} +$$
$$(11u_3^3u_1^4 - 10u_3^2u_1^5 + 1.75u_3u_1^6 + 0.25u_1^7)$$
$$x_3^3x_2x_1^9$$
$$+$$
$$(1.125u_3^4u_1^5 - 1.125u_3^3u_1^6 + 0.28125u_3^2u_1^7)$$
$$x_3^3x_2x_1^7$$

$$+(-2.25u_3^2u_1^4 + 2.25u_3u_1^5 - 0.5625u_1^6)x_3^3x_1^{11} +$$
$$(-1.125u_3^3u_1^5 + 1.125u_3^2u_1^6 - 0.28125u_3u_1^7)x_3^3x_1^9 +$$
$$(1.25u_3^2u_1^4 - 1.25u_3u_1^5 + 0.3125u_1^6)x_3^2x_2^4x_1^8 +$$
$$(-7.5u_3^3u_1^4 + 6.5u_3^2u_1^5 - 0.875u_3u_1^6 - 0.25u_1^7)$$
$$x_3^2x_2^3x_1^8$$
$$+(2.5u_3^2u_1^4 - 2.5u_3u_1^5 + 0.625u_1^6)x_3^2x_2^2x_1^{10} +$$
$$(8u_3^4u_1^4 - 3.5u_3^3u_1^5 - 2.25u_3^2u_1^6 + 0.875u_3u_1^7 +$$
$$0.0625u_1^8)$$
$$x_3^2x_2^2x_1^8$$
$$+$$
$$(-7.5u_3^3u_1^4 + 6.5u_3^2u_1^5 - 0.875u_3u_1^6 - 0.25u_1^7)$$
$$x_3^2x_2x_1^{10}$$
$$+$$
$$(-3.75u_3^4u_1^5 + 3.25u_3^3u_1^6 - 0.4375u_3^2u_1^7 - 0.125u_3u_1^8)$$
$$x_3^2x_2x_1^8$$
$$+(1.25u_3^2u_1^4 - 1.25u_3u_1^5 + 0.3125u_1^6)x_3^2x_1^{12} +$$
$$(2.5u_3^3u_1^5 - 2.5u_3^2u_1^6 + 0.625u_3u_1^7)x_3^2x_1^{10} +$$
$$(0.3125u_3^4u_1^6 - 0.3125u_3^3u_1^7 + 0.078125u_3^2u_1^8)$$
$$x_3^2x_1^8$$
$$+(-1.5u_3^3u_1^5 + 1.5u_3^2u_1^6 - 0.375u_3u_1^7)x_3x_2^2x_1^9 +$$
$$(3u_3^4u_1^5 - 2.5u_3^3u_1^6 + 0.25u_3^2u_1^7 + 0.125u_3u_1^8)$$
$$x_3x_2x_1^9$$
$$+(-1.5u_3^3u_1^5 + 1.5u_3^2u_1^6 - 0.375u_3u_1^7)x_3x_1^{11} +$$
$$(-0.75u_3^4u_1^6 + 0.75u_3^3u_1^7 - 0.1875u_3^2u_1^8)x_3x_1^9 +$$
$$(0.5u_3^4u_1^6 - 0.5u_3^3u_1^7 + 0.125u_3^2u_1^8)x_1^{10}$$

6. Pseudo remainder with p_4 over variable x_4:

$$
\begin{aligned}
g \;=\; & (u_3^{10} - u_3^9u_1 + 2u_3^8u_2^2 + 0.25u_3^8u_1^2 \\
& -2u_3^7u_2^2u_1 + u_3^6u_2^4 + 0.5u_3^6u_2^2u_1^2 \\
& -u_3^5u_2^4u_1 + 0.25u_3^4u_2^4u_1^2) \\
& x_3^8x_2^4x_1^6 \\
& + \\
& (4u_3^9u_2 - 4u_3^8u_2u_1 + 8u_3^7u_2^3 + u_3^7u_2u_1^2 \\
& -8u_3^6u_2^3u_1 + 4u_3^5u_2^5 + 2u_3^5u_2^3u_1^2 \\
& -4u_3^4u_2^5u_1 + u_3^3u_2^5u_1^2) \\
& x_3^8x_2^3x_1^7 \\
& + \\
& (6u_3^8u_2^2 - 6u_3^7u_2^2u_1 + 12u_3^6u_2^4 + \\
& 1.5u_3^6u_2^2u_1^2 - 12u_3^5u_2^4u_1 + 6u_3^4u_2^6 +
\end{aligned}
$$

$$3u_3^4u_2^4u_1^2 - 6u_3^3u_2^6u_1 + 1.5u_3^2u_2^6u_1^2)$$
$$x_3^8x_2^2x_1^8$$
$$+$$
$$(4u_3^7u_2^3 - 4u_3^6u_2^3u_1 + 8u_3^5u_2^5 + u_3^5u_2^3u_1^2$$
$$-8u_3^4u_2^5u_1 + 4u_3^3u_2^7 + 2u_3^3u_2^5u_1^2$$
$$-4u_3^2u_2^7u_1 + u_3u_2^7u_1^2)$$
$$x_3^8x_2x_1^9$$
$$+$$
$$(u_3^6u_2^4 - u_3^5u_2^4u_1 + 2u_3^4u_2^6 +$$
$$0.25u_3^4u_2^4u_1^2 - 2u_3^3u_2^6u_1 + u_3^2u_2^8 +$$
$$0.5u_3^2u_2^6u_1^2 - u_3u_2^8u_1 + 0.25u_2^8u_1^2)$$
$$x_3^8x_1^{10}$$
$$+$$
$$(-2u_3^{10} + 2u_3^9u_1 - 2u_3^8u_2^2 - 0.5u_3^8u_1^2 +$$
$$2u_3^7u_2^2u_1 - 0.5u_3^6u_2^2u_1^2)$$
$$x_3^7x_2^6x_1^5$$
$$+$$
$$(-8u_3^9u_2 + 8u_3^8u_2u_1 - 8u_3^7u_2^3 - 2u_3^7u_2u_1^2 +$$
$$8u_3^6u_2^3u_1 - 2u_3^5u_2^3u_1^2)$$
$$x_3^7x_2^5x_1^6$$
$$+$$
$$(2u_3^{11} - u_3^{10}u_1 + 2u_3^9u_2^2 - 0.5u_3^9u_1^2$$
$$-u_3^8u_2^2u_1 + 0.25u_3^8u_1^3 - 0.5u_3^7u_2^2u_1^2 +$$
$$0.25u_3^6u_2^2u_1^3)$$
$$x_3^7x_2^5x_1^5$$
$$+$$
$$(-2u_3^{10} + 2u_3^9u_1 - 14u_3^8u_2^2 - 0.5u_3^8u_1^2 +$$
$$14u_3^7u_2^2u_1 - 12u_3^6u_2^4 - 3.5u_3^6u_2^2u_1^2 +$$
$$12u_3^5u_2^4u_1 - 3u_3^4u_2^4u_1^2)$$
$$x_3^7x_2^4x_1^7$$
$$+$$
$$(10u_3^{10}u_2 - 9u_3^9u_2u_1 + 10u_3^8u_2^3 + 1.5u_3^8u_2u_1^2$$
$$-9u_3^7u_2^3u_1 + 0.25u_3^7u_2u_1^3 + 1.5u_3^6u_2^3u_1^2 +$$
$$0.25u_3^5u_2^3u_1^3)$$
$$x_3^7x_2^4x_1^6$$
$$+$$
$$(-u_3^{11}u_1 + u_3^{10}u_1^2 - u_3^9u_2^2u_1 - 0.25u_3^9u_1^3 +$$
$$u_3^8u_2^2u_1^2 - 0.25u_3^7u_2^2u_1^3)$$
$$x_3^7x_2^4x_1^5$$
$$+$$

$$(-8u_3^9u_2 + 8u_3^8u_2u_1 - 16u_3^7u_2^3 - 2u_3^7u_2u_1^2 +$$
$$16u_3^6u_2^3u_1 - 8u_3^5u_2^5 - 4u_3^5u_2^3u_1^2 +$$
$$8u_3^4u_2^5u_1 - 2u_3^3u_2^5u_1^2)$$
$$x_3^7x_2^3x_1^8$$
$$+$$
$$(20u_3^9u_2^2 - 26u_3^8u_2^2u_1 + 20u_3^7u_2^4 +$$
$$11u_3^7u_2^2u_1^2 - 26u_3^6u_2^4u_1 - 1.5u_3^6u_2^2u_1^3 +$$
$$11u_3^5u_2^4u_1^2 - 1.5u_3^4u_2^4u_1^3)$$
$$x_3^7x_2^3x_1^7$$
$$+$$
$$(-4u_3^{10}u_2u_1 + 4u_3^9u_2u_1^2 - 4u_3^8u_2^3u_1$$
$$-u_3^8u_2u_1^3 + 4u_3^7u_2^3u_1^2 - u_3^6u_2^3u_1^3)$$
$$x_3^7x_2^3x_1^6$$
$$+$$
$$(-12u_3^8u_2^2 + 12u_3^7u_2^2u_1 - 14u_3^6u_2^4$$
$$-3u_3^6u_2^2u_1^2 + 14u_3^5u_2^4u_1 - 2u_3^4u_2^6$$
$$-3.5u_3^4u_2^4u_1^2 + 2u_3^3u_2^6u_1 - 0.5u_3^2u_2^6u_1^2)$$
$$x_3^7x_2^2x_1^9$$
$$+$$
$$(20u_3^8u_2^3 - 34u_3^7u_2^3u_1 + 20u_3^6u_2^5 +$$
$$19u_3^6u_2^3u_1^2 - 34u_3^5u_2^5u_1 - 3.5u_3^5u_2^3u_1^3 +$$
$$19u_3^4u_2^5u_1^2 - 3.5u_3^3u_2^5u_1^3)$$
$$x_3^7x_2^2x_1^8$$
$$+$$
$$(-6u_3^9u_2^2u_1 + 6u_3^8u_2^2u_1^2 - 6u_3^7u_2^4u_1$$
$$-1.5u_3^7u_2^2u_1^3 + 6u_3^6u_2^4u_1^2 - 1.5u_3^5u_2^4u_1^3)$$
$$x_3^7x_2^2x_1^7$$
$$+$$
$$(-8u_3^7u_2^3 + 8u_3^6u_2^3u_1 - 8u_3^5u_2^5$$
$$-2u_3^5u_2^3u_1^2 + 8u_3^4u_2^5u_1 - 2u_3^3u_2^5u_1^2)$$
$$x_3^7x_2x_1^{10}$$
$$+$$
$$(10u_3^7u_2^4 - 21u_3^6u_2^4u_1 + 10u_3^5u_2^6 +$$
$$13.5u_3^5u_2^4u_1^2 - 21u_3^4u_2^6u_1 - 2.75u_3^4u_2^4u_1^3 +$$
$$13.5u_3^3u_2^6u_1^2 - 2.75u_3^2u_2^6u_1^3)$$
$$x_3^7x_2x_1^9$$
$$+$$
$$(-4u_3^8u_2^3u_1 + 4u_3^7u_2^3u_1^2 - 4u_3^6u_2^5u_1$$
$$-u_3^6u_2^3u_1^3 + 4u_3^5u_2^5u_1^2 - u_3^4u_2^5u_1^3)$$
$$x_3^7x_2x_1^8$$

$+$

$(-2u_3^6u_2^4 + 2u_3^5u_2^4u_1 - 2u_3^4u_2^6$
$-0.5u_3^4u_2^4u_1^2 + 2u_3^3u_2^6u_1 - 0.5u_3^2u_2^6u_1^2)$
$x_3^7x_1^{11}$

$+$

$(2u_3^6u_2^5 - 5u_3^5u_2^5u_1 + 2u_3^4u_2^7 +$
$3.5u_3^4u_2^5u_1^2 - 5u_3^3u_2^7u_1 - 0.75u_3^3u_2^5u_1^3 +$
$3.5u_3^2u_2^7u_1^2 - 0.75u_3u_2^7u_1^3)$
$x_3^7x_1^{10}$

$+$

$(-u_3^7u_2^4u_1 + u_3^6u_2^4u_1^2 - u_3^5u_2^6u_1$
$-0.25u_3^5u_2^4u_1^3 + u_3^4u_2^6u_1^2$
$-0.25u_3^3u_2^6u_1^3)$
$x_3^7x_1^9$

$+(u_3^{10} - u_3^9u_1 + 0.25u_3^8u_1^2)x_3^6x_2^8x_1^4 +$
$(4u_3^9u_2 - 4u_3^8u_2u_1 + u_3^7u_2u_1^2)x_3^6x_2^7x_1^5 +$
$(-2u_3^{11} + u_3^{10}u_1 + 0.5u_3^9u_1^2 - 0.25u_3^8u_1^3)$
$x_3^6x_2^7x_1^4$

$+$

$(2u_3^{10} - 2u_3^9u_1 + 6u_3^8u_2^2 + 0.5u_3^8u_1^2$
$-6u_3^7u_2^2u_1 + 1.5u_3^6u_2^2u_1^2)$
$x_3^6x_2^6x_1^6$

$+$

$(-10u_3^{10}u_2 + 9u_3^9u_2u_1 - 1.5u_3^8u_2u_1^2$
$-0.25u_3^7u_2u_1^3)$
$x_3^6x_2^6x_1^5$

$+$

$(u_3^{12} + u_3^{11}u_1 - 1.5u_3^{10}u_1^2 + 0.25u_3^9u_1^3 +$
$0.0625u_3^8u_1^4)$
$x_3^6x_2^6x_1^4$

$+$

$(8u_3^9u_2 - 8u_3^8u_2u_1 + 4u_3^7u_2^3 + 2u_3^7u_2u_1^2$
$-4u_3^6u_2^3u_1 + u_3^5u_2^3u_1^2)$
$x_3^6x_2^5x_1^7$

$+$

$(-2u_3^{11} + u_3^{10}u_1 - 20u_3^9u_2^2 + 0.5u_3^9u_1^2 +$
$26u_3^8u_2^2u_1 - 0.25u_3^8u_1^3 - 11u_3^7u_2^2u_1^2 +$
$1.5u_3^6u_2^2u_1^3)$
$x_3^6x_2^5x_1^6$

$+$

$$(6u_3^{11}u_2 - 5u_3^9 u_2 u_1^2 + 2u_3^8 u_2 u_1^3$$
$$-0.125u_3^7 u_2 u_1^4)$$
$$x_3^6 x_2^5 x_1^5$$
$$+$$
$$(-u_3^{12}u_1 + 0.5u_3^{11}u_1^2 + 0.25u_3^{10}u_1^3 - 0.125u_3^9 u_1^4)$$
$$x_3^6 x_2^5 x_1^4$$
$$+$$
$$(u_3^{10} - u_3^9 u_1 + 12u_3^8 u_2^2 + 0.25u_3^8 u_1^2$$
$$-12u_3^7 u_2^2 u_1 + u_3^6 u_2^4 + 3u_3^6 u_2^2 u_1^2$$
$$-u_3^5 u_2^4 u_1 + 0.25u_3^4 u_2^4 u_1^2)$$
$$x_3^6 x_2^4 x_1^8$$
$$+$$
$$(-10u_3^{10}u_2 + 9u_3^9 u_2 u_1 - 20u_3^8 u_2^3 - 1.5u_3^8 u_2 u_1^2 +$$
$$34u_3^7 u_2^3 u_1 - 0.25u_3^7 u_2 u_1^3 - 19u_3^6 u_2^3 u_1^2 +$$
$$3.5u_3^5 u_2^3 u_1^3)$$
$$x_3^6 x_2^4 x_1^7$$
$$+$$
$$(15u_3^{10}u_2^2 + u_3^{10}u_1^2 - 15u_3^9 u_2^2 u_1 - u_3^9 u_1^3 +$$
$$2.5u_3^8 u_2^2 u_1^2 + 0.25u_3^8 u_1^4 + 1.25u_3^7 u_2^2 u_1^3$$
$$-0.3125u_3^6 u_2^2 u_1^4)$$
$$x_3^6 x_2^4 x_1^6$$
$$+$$
$$(-5u_3^{11}u_2 u_1 + 4.5u_3^{10}u_2 u_1^2 - 0.75u_3^9 u_2 u_1^3$$
$$-0.125u_3^8 u_2 u_1^4)$$
$$x_3^6 x_2^4 x_1^5$$
$$+$$
$$(0.25u_3^{12}u_1^2 - 0.25u_3^{11}u_1^3 + 0.0625u_3^{10}u_1^4)$$
$$x_3^6 x_2^4 x_1^4$$
$$+$$
$$(4u_3^9 u_2 - 4u_3^8 u_2 u_1 + 8u_3^7 u_2^3 + u_3^7 u_2 u_1^2$$
$$-8u_3^6 u_2^3 u_1 + 2u_3^5 u_2^3 u_1^2)$$
$$x_3^6 x_2^3 x_1^9$$
$$+$$
$$(-20u_3^9 u_2^2 + 26u_3^8 u_2^2 u_1 - 10u_3^7 u_2^4$$
$$-11u_3^7 u_2^2 u_1^2 + 21u_3^6 u_2^4 u_1 + 1.5u_3^6 u_2^2 u_1^3$$
$$-13.5u_3^5 u_2^4 u_1^2 + 2.75u_3^4 u_2^4 u_1^3)$$
$$x_3^6 x_2^3 x_1^8$$
$$+$$
$$(20u_3^9 u_2^3 + 4u_3^9 u_2 u_1^2 - 40u_3^8 u_2^3 u_1$$
$$-4u_3^8 u_2 u_1^3 + 30u_3^7 u_2^3 u_1^2 + u_3^7 u_2 u_1^4$$

$$-10u_3^6u_2^3u_1^3 + 1.25u_3^5u_2^3u_1^4)$$
$$x_3^6x_2^3x_1^7$$
$$+$$
$$(-10u_3^{10}u_2^2u_1 + 13u_3^9u_2^2u_1^2 - 5.5u_3^8u_2^2u_1^3 +$$
$$0.75u_3^7u_2^2u_1^4)$$
$$x_3^6x_2^3x_1^6$$
$$+$$
$$(u_3^{11}u_2u_1^2 - u_3^{10}u_2u_1^3 + 0.25u_3^9u_2u_1^4)$$
$$x_3^6x_2^3x_1^5$$
$$+$$
$$(6u_3^8u_2^2 - 6u_3^7u_2^2u_1 + 2u_3^6u_2^4 +$$
$$1.5u_3^6u_2^2u_1^2 - 2u_3^5u_2^4u_1 + 0.5u_3^4u_2^4u_1^2)$$
$$x_3^6x_2^2x_1^{10}$$
$$+$$
$$(-20u_3^8u_2^3 + 34u_3^7u_2^3u_1 - 2u_3^6u_2^5$$
$$-19u_3^6u_2^3u_1^2 + 5u_3^5u_2^5u_1 + 3.5u_3^5u_2^3u_1^3$$
$$-3.5u_3^4u_2^5u_1^2 + 0.75u_3^3u_2^5u_1^3)$$
$$x_3^6x_2^2x_1^9$$
$$+$$
$$(15u_3^8u_2^4 + 6u_3^8u_2^2u_1^2 - 45u_3^7u_2^4u_1$$
$$-6u_3^7u_2^2u_1^3 + 47.5u_3^6u_2^4u_1^2 + 1.5u_3^6u_2^2u_1^4$$
$$-21.25u_3^5u_2^4u_1^3 + 3.4375u_3^4u_2^4u_1^4)$$
$$x_3^6x_2^2x_1^8$$
$$+$$
$$(-10u_3^9u_2^3u_1 + 17u_3^8u_2^3u_1^2 - 9.5u_3^7u_2^3u_1^3 +$$
$$1.75u_3^6u_2^3u_1^4)$$
$$x_3^6x_2^2x_1^7$$
$$+$$
$$(1.5u_3^{10}u_2^2u_1^2 - 1.5u_3^9u_2^2u_1^3 +$$
$$0.375u_3^8u_2^2u_1^4)$$
$$x_3^6x_2^2x_1^6$$
$$+$$
$$(4u_3^7u_2^3 - 4u_3^6u_2^3u_1 + u_3^5u_2^3u_1^2)$$
$$x_3^6x_2x_1^{11}$$
$$+$$
$$(-10u_3^7u_2^4 + 21u_3^6u_2^4u_1 - 13.5u_3^5u_2^4u_1^2 +$$
$$2.75u_3^4u_2^4u_1^3)$$
$$x_3^6x_2x_1^{10}$$
$$+$$
$$(6u_3^7u_2^5 + 4u_3^7u_2^3u_1^2 - 24u_3^6u_2^5u_1$$

$$-4u_3^6u_2^3u_1^3 + 31u_3^5u_2^5u_1^2 + u_3^5u_2^3u_1^4$$
$$-16u_3^4u_2^5u_1^3 + 2.875u_3^3u_2^5u_1^4)$$
$$x_3^6x_2x_1^9$$
$$+$$
$$(-5u_3^8u_2^4u_1 + 10.5u_3^7u_2^4u_1^2 - 6.75u_3^6u_2^4u_1^3 +$$
$$1.375u_3^5u_2^4u_1^4)$$
$$x_3^6x_2x_1^8$$
$$+$$
$$(u_3^9u_2^3u_1^2 - u_3^8u_2^3u_1^3 + 0.25u_3^7u_2^3u_1^4)$$
$$x_3^6x_2x_1^7$$
$$+$$
$$(u_3^6u_2^4 - u_3^5u_2^4u_1 + 0.25u_3^4u_2^4u_1^2)$$
$$x_3^6x_1^{12}$$
$$+$$
$$(-2u_3^6u_2^5 + 5u_3^5u_2^5u_1 - 3.5u_3^4u_2^5u_1^2 +$$
$$0.75u_3^3u_2^5u_1^3)$$
$$x_3^6x_1^{11}$$
$$+$$
$$(u_3^6u_2^6 + u_3^6u_2^4u_1^2 - 5u_3^5u_2^6u_1$$
$$-u_3^5u_2^4u_1^3 + 7.5u_3^4u_2^6u_1^2 + 0.25u_3^4u_2^4u_1^4$$
$$-4.25u_3^3u_2^6u_1^3 + 0.8125u_3^2u_2^6u_1^4)$$
$$x_3^6x_1^{10}$$
$$+$$
$$(-u_3^7u_2^5u_1 + 2.5u_3^6u_2^5u_1^2 - 1.75u_3^5u_2^5u_1^3 +$$
$$0.375u_3^4u_2^5u_1^4)$$
$$x_3^6x_1^9$$
$$+$$
$$(0.25u_3^8u_2^4u_1^2 - 0.25u_3^7u_2^4u_1^3 +$$
$$0.0625u_3^6u_2^4u_1^4)$$
$$x_3^6x_1^8$$
$$+$$
$$(u_3^{11}u_1 - 2u_3^{10}u_1^2 + 1.25u_3^9u_1^3 - 0.25u_3^8u_1^4)$$
$$x_3^5x_2^6x_1^5$$
$$+$$
$$(4u_3^{10}u_2u_1 - 8u_3^9u_2u_1^2 + 5u_3^8u_2u_1^3$$
$$-u_3^7u_2u_1^4)$$
$$x_3^5x_2^5x_1^6$$
$$+$$
$$(-u_3^{12}u_1 + 1.5u_3^{11}u_1^2 - 0.25u_3^{10}u_1^3 - 0.375u_3^9u_1^4 +$$
$$0.125u_3^8u_1^5)$$

$$x_3^5 x_2^5 x_1^5$$

$+$

$$(u_3^{11}u_1 - 2u_3^{10}u_1^2 + 6u_3^9 u_2^2 u_1 + 1.25u_3^9 u_1^3$$
$$-12u_3^8 u_2^2 u_1^2 - 0.25u_3^8 u_1^4 + 7.5u_3^7 u_2^2 u_1^3$$
$$-1.5u_3^6 u_2^2 u_1^4)$$

$$x_3^5 x_2^4 x_1^7$$

$+$

$$(-5u_3^{11}u_2 u_1 + 9.5u_3^{10}u_2 u_1^2 - 5.25u_3^9 u_2 u_1^3 +$$
$$0.625u_3^8 u_2 u_1^4 + 0.125u_3^7 u_2 u_1^5)$$

$$x_3^5 x_2^4 x_1^6$$

$+$

$$(0.5u_3^{12}u_1^2 - u_3^{11}u_1^3 + 0.625u_3^{10}u_1^4 - 0.125u_3^9 u_1^5)$$

$$x_3^5 x_2^4 x_1^5$$

$+$

$$(4u_3^{10}u_2 u_1 - 8u_3^9 u_2 u_1^2 + 4u_3^8 u_2^3 u_1 +$$
$$5u_3^8 u_2 u_1^3 - 8u_3^7 u_2^3 u_1^2 - u_3^7 u_2 u_1^4 +$$
$$5u_3^6 u_2^3 u_1^3 - u_3^5 u_2^3 u_1^4)$$

$$x_3^5 x_2^3 x_1^8$$

$+$

$$(-10u_3^{10}u_2^2 u_1 + 23u_3^9 u_2^2 u_1^2 - 18.5u_3^8 u_2^2 u_1^3 +$$
$$6.25u_3^7 u_2^2 u_1^4 - 0.75u_3^6 u_2^2 u_1^5)$$

$$x_3^5 x_2^3 x_1^7$$

$+$

$$(2u_3^{11}u_2 u_1^2 - 4u_3^{10}u_2 u_1^3 + 2.5u_3^9 u_2 u_1^4$$
$$-0.5u_3^8 u_2 u_1^5)$$

$$x_3^5 x_2^3 x_1^6$$

$+$

$$(6u_3^9 u_2^2 u_1 - 12u_3^8 u_2^2 u_1^2 + u_3^7 u_2^4 u_1 +$$
$$7.5u_3^7 u_2^2 u_1^3 - 2u_3^6 u_2^4 u_1^2 - 1.5u_3^6 u_2^2 u_1^4 +$$
$$1.25u_3^5 u_2^4 u_1^3 - 0.25u_3^4 u_2^4 u_1^4)$$

$$x_3^5 x_2^2 x_1^9$$

$+$

$$(-10u_3^9 u_2^3 u_1 + 27u_3^8 u_2^3 u_1^2 - 26.5u_3^7 u_2^3 u_1^3 +$$
$$11.25u_3^6 u_2^3 u_1^4 - 1.75u_3^5 u_2^3 u_1^5)$$

$$x_3^5 x_2^2 x_1^8$$

$+$

$$(3u_3^{10}u_2^2 u_1^2 - 6u_3^9 u_2^2 u_1^3 + 3.75u_3^8 u_2^2 u_1^4$$
$$-0.75u_3^7 u_2^2 u_1^5)$$

$$x_3^5 x_2^2 x_1^7$$

$+$

$$(4u_3^8 u_2^3 u_1 - 8u_3^7 u_2^3 u_1^2 + 5u_3^6 u_2^3 u_1^3$$
$$-u_3^5 u_2^3 u_1^4)$$
$$x_3^5 x_2 x_1^{10}$$
$$+$$
$$(-5u_3^8 u_2^4 u_1 + 15.5u_3^7 u_2^4 u_1^2 - 17.25u_3^6 u_2^4 u_1^3 +$$
$$8.125u_3^5 u_2^4 u_1^4 - 1.375u_3^4 u_2^4 u_1^5)$$
$$x_3^5 x_2 x_1^9$$
$$+$$
$$(2u_3^9 u_2^3 u_1^2 - 4u_3^8 u_2^3 u_1^3 + 2.5u_3^7 u_2^3 u_1^4$$
$$-0.5u_3^6 u_2^3 u_1^5)$$
$$x_3^5 x_2 x_1^8$$
$$+$$
$$(u_3^7 u_2^4 u_1 - 2u_3^6 u_2^4 u_1^2 + 1.25u_3^5 u_2^4 u_1^3$$
$$-0.25u_3^4 u_2^4 u_1^4)$$
$$x_3^5 x_1^{11}$$
$$+$$
$$(-u_3^7 u_2^5 u_1 + 3.5u_3^6 u_2^5 u_1^2 - 4.25u_3^5 u_2^5 u_1^3 +$$
$$2.125u_3^4 u_2^5 u_1^4 - 0.375u_3^3 u_2^5 u_1^5)$$
$$x_3^5 x_1^{10}$$
$$+$$
$$(0.5u_3^8 u_2^4 u_1^2 - u_3^7 u_2^4 u_1^3 + 0.625u_3^6 u_2^4 u_1^4$$
$$-0.125u_3^5 u_2^4 u_1^5)$$
$$x_3^5 x_1^9$$
$$+$$
$$(0.25u_3^{10} u_1^2 - 0.25u_3^9 u_1^3 + 0.0625u_3^8 u_1^4)$$
$$x_3^4 x_2^6 x_1^6$$
$$+$$
$$(0.5u_3^9 u_2 u_1^2 - 0.5u_3^8 u_2 u_1^3 + 0.125u_3^7 u_2 u_1^4)$$
$$x_3^4 x_2^5 x_1^7$$
$$+$$
$$(-0.5u_3^{11} u_1^2 + 0.25u_3^{10} u_1^3 + 0.125u_3^9 u_1^4$$
$$-0.0625u_3^8 u_1^5)$$
$$x_3^4 x_2^5 x_1^6$$
$$+$$
$$(0.5u_3^{10} u_1^2 - 0.5u_3^9 u_1^3 + 0.25u_3^8 u_2^2 u_1^2 +$$
$$0.125u_3^8 u_1^4 - 0.25u_3^7 u_2^2 u_1^3 + 0.0625u_3^6 u_2^2 u_1^4)$$
$$x_3^4 x_2^4 x_1^8$$
$$+$$
$$(-1.5u_3^{10} u_2 u_1^2 + 1.25u_3^9 u_2 u_1^3 - 0.125u_3^8 u_2 u_1^4$$
$$-0.0625u_3^7 u_2 u_1^5)$$

$x_3^4 x_2^4 x_1^7$

$+$

$(0.5 u_3^{12} u_1^2 - 0.5 u_3^{11} u_1^3 + 0.4375 u_3^{10} u_1^4$
$- 0.3125 u_3^9 u_1^5 + 0.078125 u_3^8 u_1^6)$
$x_3^4 x_2^4 x_1^6$

$+$

$(u_3^9 u_2 u_1^2 - u_3^8 u_2 u_1^3 + 0.25 u_3^7 u_2 u_1^4)$
$x_3^4 x_2^3 x_1^9$

$+$

$(-0.5 u_3^{11} u_1^2 - 1.5 u_3^9 u_2^2 u_1^2 + 0.375 u_3^9 u_1^4 +$
$1.5 u_3^8 u_2^2 u_1^3 - 0.125 u_3^8 u_1^5 - 0.375 u_3^7 u_2^2 u_1^4)$
$x_3^4 x_2^3 x_1^8$

$+$

$(2 u_3^{11} u_2 u_1^2 - 3 u_3^{10} u_2 u_1^3 + 2.5 u_3^9 u_2 u_1^4$
$- 1.25 u_3^8 u_2 u_1^5 + 0.25 u_3^7 u_2 u_1^6)$
$x_3^4 x_2^3 x_1^7$

$+$

$(-0.25 u_3^{12} u_1^3 + 0.125 u_3^{11} u_1^4 + 0.0625 u_3^{10} u_1^5$
$- 0.03125 u_3^9 u_1^6)$
$x_3^4 x_2^3 x_1^6$

$+$

$(0.25 u_3^{10} u_1^2 - 0.25 u_3^9 u_1^3 + 0.5 u_3^8 u_2^2 u_1^2 +$
$0.0625 u_3^8 u_1^4 - 0.5 u_3^7 u_2^2 u_1^3 + 0.125 u_3^6 u_2^2 u_1^4)$
$x_3^4 x_2^2 x_1^{10}$

$+$

$(-1.5 u_3^{10} u_2 u_1^2 + u_3^9 u_2 u_1^3 - 0.5 u_3^8 u_2^3 u_1^2 +$
$0.125 u_3^8 u_2 u_1^4 + 0.5 u_3^7 u_2^3 u_1^3 - 0.125 u_3^7 u_2 u_1^5$
$- 0.125 u_3^6 u_2^3 u_1^4)$
$x_3^4 x_2^2 x_1^9$

$+$

$(0.5 u_3^{11} u_1^3 + 3 u_3^{10} u_2^2 u_1^2 - 0.375 u_3^{10} u_1^4$
$- 5.5 u_3^9 u_2^2 u_1^3 + 4.75 u_3^8 u_2^2 u_1^4 + 0.03125 u_3^8 u_1^6$
$- 2.125 u_3^7 u_2^2 u_1^5 + 0.375 u_3^6 u_2^2 u_1^6)$
$x_3^4 x_2^2 x_1^8$

$+$

$(-0.75 u_3^{11} u_2 u_1^3 + 0.625 u_3^{10} u_2 u_1^4 - 0.0625 u_3^9 u_2 u_1^5$
$- 0.03125 u_3^8 u_2 u_1^6)$
$x_3^4 x_2^2 x_1^7$

$+$

$(0.0625 u_3^{12} u_1^4 - 0.0625 u_3^{11} u_1^5 + 0.015625 u_3^{10} u_1^6)$

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$$x_3^4 x_2^2 x_1^6$$

$+$

$$(0.5u_3^9 u_2 u_1^2 - 0.5u_3^8 u_2 u_1^3 + 0.125u_3^7 u_2 u_1^4)$$
$$x_3^4 x_2 x_1^{11}$$

$+$

$$(-0.25u_3^{10} u_1^3 - 1.5u_3^9 u_2^2 u_1^2 + 0.25u_3^9 u_1^4 +$$
$$1.5u_3^8 u_2^2 u_1^3 - 0.0625u_3^8 u_1^5 - 0.375u_3^7 u_2^2 u_1^4)$$
$$x_3^4 x_2 x_1^{10}$$

$+$

$$(u_3^{10} u_2 u_1^3 + 2u_3^9 u_2^3 u_1^2 - u_3^9 u_2 u_1^4$$
$$-4u_3^8 u_2^3 u_1^3 + 0.25u_3^8 u_2 u_1^5 + 3.5u_3^7 u_2^3 u_1^4$$
$$-1.5u_3^6 u_2^3 u_1^5 + 0.25u_3^5 u_2^3 u_1^6)$$
$$x_3^4 x_2 x_1^9$$

$+$

$$(-0.125u_3^{11} u_1^4 - 0.75u_3^{10} u_2^2 u_1^3 + 0.125u_3^{10} u_1^5 +$$
$$0.75u_3^9 u_2^2 u_1^4 - 0.03125u_3^9 u_1^6$$
$$-0.1875u_3^8 u_2^2 u_1^5)$$
$$x_3^4 x_2 x_1^8$$

$+$

$$(0.125u_3^{11} u_2 u_1^4 - 0.125u_3^{10} u_2 u_1^5 + 0.03125u_3^9 u_2 u_1^6)$$
$$x_3^4 x_2 x_1^7$$

$+$

$$(0.25u_3^8 u_2^2 u_1^2 - 0.25u_3^7 u_2^2 u_1^3 +$$
$$0.0625u_3^6 u_2^2 u_1^4)$$
$$x_3^4 x_1^{12}$$

$+$

$$(-0.25u_3^9 u_2 u_1^3 - 0.5u_3^8 u_2^3 u_1^2 + 0.25u_3^8 u_2 u_1^4 +$$
$$0.5u_3^7 u_2^3 u_1^3 - 0.0625u_3^7 u_2 u_1^5$$
$$-0.125u_3^6 u_2^3 u_1^4)$$
$$x_3^4 x_1^{11}$$

$+$

$$(0.0625u_3^{10} u_1^4 + 0.5u_3^9 u_2^2 u_1^3 - 0.0625u_3^9 u_1^5 +$$
$$0.5u_3^8 u_2^4 u_1^2 - 0.5u_3^8 u_2^2 u_1^4 + 0.015625u_3^8 u_1^6$$
$$-u_3^7 u_2^4 u_1^3 + 0.125u_3^7 u_2^2 u_1^5 +$$
$$0.875u_3^6 u_2^4 u_1^4 - 0.375u_3^5 u_2^4 u_1^5 +$$
$$0.0625u_3^4 u_2^4 u_1^6)$$
$$x_3^4 x_1^{10}$$

$+$

$$(-0.125u_3^{10} u_2 u_1^4 - 0.25u_3^9 u_2^3 u_1^3 + 0.125u_3^9 u_2 u_1^5 +$$
$$0.25u_3^8 u_2^3 u_1^4 - 0.03125u_3^8 u_2 u_1^6$$

$$-0.0625u_3^7u_2^3u_1^5)$$
$$x_3^4x_1^9$$
$$+$$
$$(0.0625u_3^{10}u_2^2u_1^4 - 0.0625u_3^9u_2^2u_1^5 +$$
$$0.015625u_3^8u_2^2u_1^6)$$
$$x_3^4x_1^8$$

7. Pseudo remainder with p_3 over variable x_3:

$$
\begin{aligned}
g \quad = \quad & (u_3^{20}u_2^6u_1^6 - u_3^{19}u_2^6u_1^7 + 2u_3^{18}u_2^8u_1^6 + \\
& 0.25u_3^{18}u_2^6u_1^8 - 2u_3^{17}u_2^8u_1^7 + \\
& u_3^{16}u_2^{10}u_1^6 + 0.5u_3^{16}u_2^8u_1^8 - u_3^{15}u_2^{10}u_1^7 + \\
& 0.25u_3^{14}u_2^{10}u_1^8) \\
& x_2^8x_1^4 \\
& + \\
& (4u_3^{19}u_2^7u_1^6 - 4u_3^{18}u_2^7u_1^7 + 8u_3^{17}u_2^9u_1^6 + \\
& u_3^{17}u_2^7u_1^8 - 8u_3^{16}u_2^9u_1^7 + 4u_3^{15}u_2^{11}u_1^6 + \\
& 2u_3^{15}u_2^9u_1^8 - 4u_3^{14}u_2^{11}u_1^7 + u_3^{13}u_2^{11}u_1^8) \\
& x_2^7x_1^5 \\
& + \\
& (-2u_3^{21}u_2^6u_1^6 + u_3^{20}u_2^6u_1^7 - 4u_3^{19}u_2^8u_1^6 + \\
& 0.5u_3^{19}u_2^6u_1^8 + 2u_3^{18}u_2^8u_1^7 \\
& -0.25u_3^{18}u_2^6u_1^9 - 2u_3^{17}u_2^{10}u_1^6 + \\
& u_3^{17}u_2^8u_1^8 + u_3^{16}u_2^{10}u_1^7 - 0.5u_3^{16}u_2^8u_1^9 + \\
& 0.5u_3^{15}u_2^{10}u_1^8 - 0.25u_3^{14}u_2^{10}u_1^9) \\
& x_2^7x_1^4 \\
& + \\
& (0.25u_3^{22}u_2^4u_1^6 - 0.25u_3^{21}u_2^4u_1^7 + \\
& 3u_3^{20}u_2^6u_1^6 + 0.0625u_3^{20}u_2^4u_1^8 \\
& -3u_3^{19}u_2^6u_1^7 + 11.5u_3^{18}u_2^8u_1^6 + \\
& 0.75u_3^{18}u_2^6u_1^8 - 11.5u_3^{17}u_2^8u_1^7 + \\
& 15u_3^{16}u_2^{10}u_1^6 + 2.875u_3^{16}u_2^8u_1^8 \\
& -15u_3^{15}u_2^{10}u_1^7 + 6.25u_3^{14}u_2^{12}u_1^6 + \\
& 3.75u_3^{14}u_2^{10}u_1^8 - 6.25u_3^{13}u_2^{12}u_1^7 + \\
& 1.5625u_3^{12}u_2^{12}u_1^8) \\
& x_2^6x_1^6 \\
& + \\
& (u_3^{22}u_2^5u_1^6 - 2u_3^{21}u_2^5u_1^7 - 7u_3^{20}u_2^7u_1^6 + \\
& 1.25u_3^{20}u_2^5u_1^8 + u_3^{19}u_2^7u_1^7 \\
& -0.25u_3^{19}u_2^5u_1^9 - 17u_3^{18}u_2^9u_1^6 +
\end{aligned}
$$

$$4.25u_3^{18}u_2^7u_1^8 + 8u_3^{17}u_2^9u_1^7$$
$$-1.5u_3^{17}u_2^7u_1^9 - 9u_3^{16}u_2^{11}u_1^6 +$$
$$4.75u_3^{16}u_2^9u_1^8 + 5u_3^{15}u_2^{11}u_1^7$$
$$-2.25u_3^{15}u_2^9u_1^9 + 1.75u_3^{14}u_2^{11}u_1^8$$
$$-u_3^{13}u_2^{11}u_1^9)$$
$$x_2^6x_1^5$$
$$+$$
$$(u_3^{22}u_2^6u_1^6 + u_3^{21}u_2^6u_1^7 + 2u_3^{20}u_2^8u_1^6$$
$$-1.5u_3^{20}u_2^6u_1^8 + 2u_3^{19}u_2^8u_1^7 +$$
$$0.25u_3^{19}u_2^6u_1^9 + u_3^{18}u_2^{10}u_1^6$$
$$-3u_3^{18}u_2^8u_1^8 + 0.0625u_3^{18}u_2^6u_1^{10} +$$
$$u_3^{17}u_2^{10}u_1^7 + 0.5u_3^{17}u_2^8u_1^9$$
$$-1.5u_3^{16}u_2^{10}u_1^8 + 0.125u_3^{16}u_2^8u_1^{10} +$$
$$0.25u_3^{15}u_2^{10}u_1^9 + 0.0625u_3^{14}u_2^{10}u_1^{10})$$
$$x_2^6x_1^4$$
$$+$$
$$(0.5u_3^{21}u_2^5u_1^6 - 0.5u_3^{20}u_2^5u_1^7 +$$
$$10u_3^{19}u_2^7u_1^6 + 0.125u_3^{19}u_2^5u_1^8$$
$$-10u_3^{18}u_2^7u_1^7 + 23u_3^{17}u_2^9u_1^6 +$$
$$2.5u_3^{17}u_2^7u_1^8 - 23u_3^{16}u_2^9u_1^7 +$$
$$18u_3^{15}u_2^{11}u_1^6 + 5.75u_3^{15}u_2^9u_1^8$$
$$-18u_3^{14}u_2^{11}u_1^7 + 4.5u_3^{13}u_2^{13}u_1^6 +$$
$$4.5u_3^{13}u_2^{11}u_1^8 - 4.5u_3^{12}u_2^{13}u_1^7 +$$
$$1.125u_3^{11}u_2^{13}u_1^8)$$
$$x_2^5x_1^7$$
$$+$$
$$(-0.5u_3^{23}u_2^4u_1^6 + 0.25u_3^{22}u_2^4u_1^7 +$$
$$0.125u_3^{21}u_2^4u_1^8 - 6u_3^{20}u_2^6u_1^7$$
$$-0.0625u_3^{20}u_2^4u_1^9 - 15u_3^{19}u_2^8u_1^6 +$$
$$6u_3^{19}u_2^6u_1^8 - 2.5u_3^{18}u_2^8u_1^7$$
$$-1.5u_3^{18}u_2^6u_1^9 - 32u_3^{17}u_2^{10}u_1^6 +$$
$$13.75u_3^{17}u_2^8u_1^8 + 14u_3^{16}u_2^{10}u_1^7$$
$$-4.375u_3^{16}u_2^8u_1^9 - 16.5u_3^{15}u_2^{12}u_1^6 +$$
$$10u_3^{15}u_2^{10}u_1^8 + 10.25u_3^{14}u_2^{12}u_1^7$$
$$-4.5u_3^{14}u_2^{10}u_1^9 + 2.125u_3^{13}u_2^{12}u_1^8$$
$$-1.5625u_3^{12}u_2^{12}u_1^9)$$
$$x_2^5x_1^6$$
$$+$$
$$(-u_3^{23}u_2^5u_1^6 + 1.5u_3^{22}u_2^5u_1^7 + 3u_3^{21}u_2^7u_1^6$$
$$-0.25u_3^{21}u_2^5u_1^8 + 6.5u_3^{20}u_2^7u_1^7$$

$$-0.375u_3^{20}u_2^5u_1^9 + 9u_3^{19}u_2^9u_1^6$$
$$-6.75u_3^{19}u_2^7u_1^8 + 0.125u_3^{19}u_2^5u_1^{10} +$$
$$8.5u_3^{18}u_2^9u_1^7 + 0.375u_3^{18}u_2^7u_1^9 +$$
$$5u_3^{17}u_2^{11}u_1^6 - 12.75u_3^{17}u_2^9u_1^8 +$$
$$0.5u_3^{17}u_2^7u_1^{10} + 3.5u_3^{16}u_2^{11}u_1^7 +$$
$$1.875u_3^{16}u_2^9u_1^9 - 6.25u_3^{15}u_2^{11}u_1^8 +$$
$$0.625u_3^{15}u_2^9u_1^{10} + 1.125u_3^{14}u_2^{11}u_1^9 +$$
$$0.25u_3^{13}u_2^{11}u_1^{10})$$
$$x_2^5x_1^5$$
$$+$$
$$(-u_3^{22}u_2^6u_1^7 + 0.5u_3^{21}u_2^6u_1^8 - 2u_3^{20}u_2^8u_1^7 +$$
$$0.25u_3^{20}u_2^6u_1^9 + u_3^{19}u_2^8u_1^8$$
$$-0.125u_3^{19}u_2^6u_1^{10} - u_3^{18}u_2^{10}u_1^7 +$$
$$0.5u_3^{18}u_2^8u_1^9 + 0.5u_3^{17}u_2^{10}u_1^8$$
$$-0.25u_3^{17}u_2^8u_1^{10} + 0.25u_3^{16}u_2^{10}u_1^9$$
$$-0.125u_3^{15}u_2^{10}u_1^{10})$$
$$x_2^5x_1^4$$
$$+$$
$$(0.5u_3^{22}u_2^4u_1^6 - 0.5u_3^{21}u_2^4u_1^7 +$$
$$3.25u_3^{20}u_2^6u_1^6 + 0.125u_3^{20}u_2^4u_1^8$$
$$-3.25u_3^{19}u_2^6u_1^7 + 18u_3^{18}u_2^8u_1^6 +$$
$$0.8125u_3^{18}u_2^6u_1^8 - 18u_3^{17}u_2^8u_1^7 +$$
$$29.5u_3^{16}u_2^{10}u_1^6 + 4.5u_3^{16}u_2^8u_1^8$$
$$-29.5u_3^{15}u_2^{10}u_1^7 + 15.5u_3^{14}u_2^{12}u_1^6 +$$
$$7.375u_3^{14}u_2^{10}u_1^8 - 15.5u_3^{13}u_2^{12}u_1^7 +$$
$$1.25u_3^{12}u_2^{14}u_1^6 + 3.875u_3^{12}u_2^{12}u_1^8$$
$$-1.25u_3^{11}u_2^{14}u_1^7 + 0.3125u_3^{10}u_2^{14}u_1^8)$$
$$x_2^4x_1^8$$
$$+$$
$$(-0.5u_3^{22}u_2^5u_1^6 - 0.75u_3^{21}u_2^5u_1^7$$
$$-7u_3^{20}u_2^7u_1^6 + 1.125u_3^{20}u_2^5u_1^8$$
$$-6u_3^{19}u_2^7u_1^7 - 0.3125u_3^{19}u_2^5u_1^9$$
$$-28u_3^{18}u_2^9u_1^6 + 11.25u_3^{18}u_2^7u_1^8 +$$
$$1.5u_3^{17}u_2^9u_1^7 - 3.25u_3^{17}u_2^7u_1^9$$
$$-37u_3^{16}u_2^{11}u_1^6 + 19.5u_3^{16}u_2^9u_1^8 +$$
$$18u_3^{15}u_2^{11}u_1^7 - 6.625u_3^{15}u_2^9u_1^9$$
$$-15.5u_3^{14}u_2^{13}u_1^6 + 9.75u_3^{14}u_2^{11}u_1^8 +$$
$$11.25u_3^{13}u_2^{13}u_1^7 - 4.75u_3^{13}u_2^{11}u_1^9 +$$
$$0.375u_3^{12}u_2^{13}u_1^8 - 1.0625u_3^{11}u_2^{13}u_1^9)$$
$$x_2^4x_1^7$$

$+$

$(0.5u_3^{24}u_2^4u_1^6 - 0.5u_3^{23}u_2^4u_1^7$
$-3u_3^{22}u_2^6u_1^6 + 0.4375u_3^{22}u_2^4u_1^8 +$
$7.5u_3^{21}u_2^6u_1^7 - 0.3125u_3^{21}u_2^4u_1^9 +$
$3u_3^{20}u_2^8u_1^6 - 2.5u_3^{20}u_2^6u_1^8 +$
$0.078125u_3^{20}u_2^4u_1^{10} + 20.5u_3^{19}u_2^8u_1^7$
$-1.625u_3^{19}u_2^6u_1^9 + 17u_3^{18}u_2^{10}u_1^6$
$-16.625u_3^{18}u_2^8u_1^8 + 0.6875u_3^{18}u_2^6u_1^{10} +$
$16.5u_3^{17}u_2^{10}u_1^7 - 0.25u_3^{17}u_2^8u_1^9 +$
$10.5u_3^{16}u_2^{12}u_1^6 - 24u_3^{16}u_2^{10}u_1^8 +$
$1.53125u_3^{16}u_2^8u_1^{10} + 4u_3^{15}u_2^{12}u_1^7 +$
$3.125u_3^{15}u_2^{10}u_1^9 - 10.3125u_3^{14}u_2^{12}u_1^8 +$
$1.3125u_3^{14}u_2^{10}u_1^{10} + 2.0625u_3^{13}u_2^{12}u_1^9 +$
$0.390625u_3^{12}u_2^{12}u_1^{10})$
$x_2^4x_1^6$
$+$

$(0.5u_3^{23}u_2^5u_1^7 - u_3^{22}u_2^5u_1^8$
$-3.5u_3^{21}u_2^7u_1^7 + 0.625u_3^{21}u_2^5u_1^9 +$
$0.5u_3^{20}u_2^7u_1^8 - 0.125u_3^{20}u_2^5u_1^{10}$
$-8.5u_3^{19}u_2^9u_1^7 + 2.125u_3^{19}u_2^7u_1^9 +$
$4u_3^{18}u_2^9u_1^8 - 0.75u_3^{18}u_2^7u_1^{10}$
$-4.5u_3^{17}u_2^{11}u_1^7 + 2.375u_3^{17}u_2^9u_1^9 +$
$2.5u_3^{16}u_2^{11}u_1^8 - 1.125u_3^{16}u_2^9u_1^{10} +$
$0.875u_3^{15}u_2^{11}u_1^9 - 0.5u_3^{14}u_2^{11}u_1^{10})$
$x_2^4x_1^5$
$+$

$(0.25u_3^{22}u_2^6u_1^8 - 0.25u_3^{21}u_2^6u_1^9 +$
$0.5u_3^{20}u_2^8u_1^8 + 0.0625u_3^{20}u_2^6u_1^{10}$
$-0.5u_3^{19}u_2^8u_1^9 + 0.25u_3^{18}u_2^{10}u_1^8 +$
$0.125u_3^{18}u_2^8u_1^{10} - 0.25u_3^{17}u_2^{10}u_1^9 +$
$0.0625u_3^{16}u_2^{10}u_1^{10})$
$x_2^4x_1^4$
$+$

$(u_3^{21}u_2^5u_1^6 - u_3^{20}u_2^5u_1^7 + 8u_3^{19}u_2^7u_1^6 +$
$0.25u_3^{19}u_2^5u_1^8 - 8u_3^{18}u_2^7u_1^7 +$
$22u_3^{17}u_2^9u_1^6 + 2u_3^{17}u_2^7u_1^8 - 22u_3^{16}u_2^9u_1^7 +$
$24u_3^{15}u_2^{11}u_1^6 + 5.5u_3^{15}u_2^9u_1^8$
$-24u_3^{14}u_2^{11}u_1^7 + 9u_3^{13}u_2^{13}u_1^6 +$
$6u_3^{13}u_2^{11}u_1^8 - 9u_3^{12}u_2^{13}u_1^7 +$
$2.25u_3^{11}u_2^{13}u_1^8)$

$x_2^3 x_1^9$

$+$

$(-0.5u_3^{23}u_2^4u_1^6 + 0.5u_3^{21}u_2^6u_1^6 +$

$0.375u_3^{21}u_2^4u_1^8 - 6.5u_3^{20}u_2^6u_1^7$

$-0.125u_3^{20}u_2^4u_1^9 - 13u_3^{19}u_2^8u_1^6 +$

$6.125u_3^{19}u_2^6u_1^8 - 8u_3^{18}u_2^8u_1^7$

$-1.5u_3^{18}u_2^6u_1^9 - 37u_3^{17}u_2^{10}u_1^6 +$

$17.75u_3^{17}u_2^8u_1^8 + 10u_3^{16}u_2^{10}u_1^7$

$-5.25u_3^{16}u_2^8u_1^9 - 30.5u_3^{15}u_2^{12}u_1^6 +$

$17.75u_3^{15}u_2^{10}u_1^8 + 18u_3^{14}u_2^{12}u_1^7$

$-6.75u_3^{14}u_2^{10}u_1^9 - 7.5u_3^{13}u_2^{14}u_1^6 +$

$4.875u_3^{13}u_2^{12}u_1^8 + 6.5u_3^{12}u_2^{14}u_1^7$

$-3.125u_3^{12}u_2^{12}u_1^9 - 0.875u_3^{11}u_2^{14}u_1^8$

$-0.25u_3^{10}u_2^{14}u_1^9)$

$x_2^3 x_1^8$

$+$

$(2u_3^{23}u_2^5u_1^6 - 3u_3^{22}u_2^5u_1^7 - 2u_3^{21}u_2^7u_1^6 +$

$2.5u_3^{21}u_2^5u_1^8 + 11u_3^{20}u_2^7u_1^7$

$-1.25u_3^{20}u_2^5u_1^9 + 2u_3^{19}u_2^9u_1^6$

$-4.5u_3^{19}u_2^7u_1^8 + 0.25u_3^{19}u_2^5u_1^{10} +$

$31u_3^{18}u_2^9u_1^7 - 2.75u_3^{18}u_2^7u_1^9 +$

$18u_3^{17}u_2^{11}u_1^6 - 24.5u_3^{17}u_2^9u_1^8 +$

$1.25u_3^{17}u_2^7u_1^{10} + 17u_3^{16}u_2^{11}u_1^7 +$

$0.25u_3^{16}u_2^9u_1^9 + 12u_3^{15}u_2^{13}u_1^6$

$-25.5u_3^{15}u_2^{11}u_1^8 + 2u_3^{15}u_2^9u_1^{10} +$

$3.75u_3^{14}u_2^{11}u_1^9 - 8u_3^{13}u_2^{13}u_1^8 +$

$1.25u_3^{13}u_2^{11}u_1^{10} + 2u_3^{12}u_2^{13}u_1^9 +$

$0.25u_3^{11}u_2^{13}u_1^{10})$

$x_2^3 x_1^7$

$+$

$(-0.25u_3^{24}u_2^4u_1^7 + 0.125u_3^{23}u_2^4u_1^8 +$

$u_3^{22}u_2^6u_1^7 + 0.0625u_3^{22}u_2^4u_1^9$

$-3.5u_3^{21}u_2^6u_1^8 - 0.03125u_3^{21}u_2^4u_1^{10}$

$-5.5u_3^{20}u_2^8u_1^7 + 2.75u_3^{20}u_2^6u_1^9$

$-2.25u_3^{19}u_2^8u_1^8 - 0.625u_3^{19}u_2^6u_1^{10}$

$-15u_3^{18}u_2^{10}u_1^7 + 6.375u_3^{18}u_2^8u_1^9 +$

$6.5u_3^{17}u_2^{10}u_1^8 - 1.9375u_3^{17}u_2^8u_1^{10}$

$-8.25u_3^{16}u_2^{12}u_1^7 + 4.75u_3^{16}u_2^{10}u_1^9 +$

$5.125u_3^{15}u_2^{12}u_1^8 - 2.125u_3^{15}u_2^{10}u_1^{10} +$

$1.0625u_3^{14}u_2^{12}u_1^9 - 0.78125u_3^{13}u_2^{12}u_1^{10})$

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$x_2^3 x_1^6$

$+$

$(u_3^{21} u_2^7 u_1^8 - u_3^{20} u_2^7 u_1^9 + 2u_3^{19} u_2^9 u_1^8 +$

$0.25 u_3^{19} u_2^7 u_1^{10} - 2u_3^{18} u_2^9 u_1^9 +$

$u_3^{17} u_2^{11} u_1^8 + 0.5 u_3^{17} u_2^9 u_1^{10}$

$-u_3^{16} u_2^{11} u_1^9 + 0.25 u_3^{15} u_2^{11} u_1^{10})$

$x_2^3 x_1^5$

$+$

$(0.25 u_3^{22} u_2^4 u_1^6 - 0.25 u_3^{21} u_2^4 u_1^7 +$

$1.5 u_3^{20} u_2^6 u_1^6 + 0.0625 u_3^{20} u_2^4 u_1^8$

$-1.5 u_3^{19} u_2^6 u_1^7 + 9.5 u_3^{18} u_2^8 u_1^6 +$

$0.375 u_3^{18} u_2^6 u_1^8 - 9.5 u_3^{17} u_2^8 u_1^7 +$

$18 u_3^{16} u_2^{10} u_1^6 + 2.375 u_3^{16} u_2^8 u_1^8$

$-18 u_3^{15} u_2^{10} u_1^7 + 12.25 u_3^{14} u_2^{12} u_1^6 +$

$4.5 u_3^{14} u_2^{10} u_1^8 - 12.25 u_3^{13} u_2^{12} u_1^7 +$

$2.5 u_3^{12} u_2^{14} u_1^6 + 3.0625 u_3^{12} u_2^{12} u_1^8$

$-2.5 u_3^{11} u_2^{14} u_1^7 + 0.625 u_3^{10} u_2^{14} u_1^8)$

$x_2^2 x_1^{10}$

$+$

$(-1.5 u_3^{22} u_2^5 u_1^6 + u_3^{21} u_2^5 u_1^7$

$-0.5 u_3^{20} u_2^7 u_1^6 + 0.125 u_3^{20} u_2^5 u_1^8$

$-7.5 u_3^{19} u_2^7 u_1^7 - 0.125 u_3^{19} u_2^5 u_1^9$

$-12 u_3^{18} u_2^9 u_1^6 + 7.875 u_3^{18} u_2^7 u_1^8$

$-8 u_3^{17} u_2^9 u_1^7 - 2u_3^{17} u_2^7 u_1^9$

$-30 u_3^{16} u_2^{11} u_1^6 + 17 u_3^{16} u_2^9 u_1^8 +$

$12 u_3^{15} u_2^{11} u_1^7 - 5u_3^{15} u_2^9 u_1^9$

$-18.5 u_3^{14} u_2^{13} u_1^6 + 10.5 u_3^{14} u_2^{11} u_1^8 +$

$13 u_3^{13} u_2^{13} u_1^7 - 4.5 u_3^{13} u_2^{11} u_1^9$

$-1.5 u_3^{12} u_2^{15} u_1^6 + 0.875 u_3^{12} u_2^{13} u_1^8 +$

$1.5 u_3^{11} u_2^{15} u_1^7 - 1.375 u_3^{11} u_2^{13} u_1^9$

$-0.375 u_3^{10} u_2^{15} u_1^8)$

$x_2^2 x_1^9$

$+$

$(0.5 u_3^{23} u_2^4 u_1^7 + 3u_3^{22} u_2^6 u_1^6$

$-0.375 u_3^{22} u_2^4 u_1^8 - 3.5 u_3^{21} u_2^6 u_1^7 +$

$2u_3^{20} u_2^8 u_1^6 + 3.25 u_3^{20} u_2^6 u_1^8 +$

$0.03125 u_3^{20} u_2^4 u_1^{10} + 8u_3^{19} u_2^8 u_1^7$

$-2.125 u_3^{19} u_2^6 u_1^9 + 3u_3^{18} u_2^{10} u_1^6$

$-3.75 u_3^{18} u_2^8 u_1^8 + 0.5 u_3^{18} u_2^6 u_1^{10} +$

$25 u_3^{17} u_2^{10} u_1^7 - 3.25 u_3^{17} u_2^8 u_1^9 +$

$$12u_3^{16}u_2^{12}u_1^6 - 21u_3^{16}u_2^{10}u_1^8 +$$
$$1.4375u_3^{16}u_2^8u_1^{10} + 9.5u_3^{15}u_2^{12}u_1^7 +$$
$$0.75u_3^{15}u_2^{10}u_1^9 + 8u_3^{14}u_2^{14}u_1^6$$
$$-15.875u_3^{14}u_2^{12}u_1^8 + 1.5625u_3^{14}u_2^{10}u_1^{10}$$
$$-3.5u_3^{13}u_2^{14}u_1^7 + 2.75u_3^{13}u_2^{12}u_1^9$$
$$-2.25u_3^{12}u_2^{14}u_1^8 + 0.65625u_3^{12}u_2^{12}u_1^{10} +$$
$$0.875u_3^{11}u_2^{14}u_1^9 + 0.0625u_3^{10}u_2^{14}u_1^{10})$$
$$x_2^2x_1^8$$
$$+$$
$$(-0.75u_3^{23}u_2^5u_1^7 + 0.625u_3^{22}u_2^5u_1^8$$
$$-0.0625u_3^{21}u_2^5u_1^9 - 3.5u_3^{20}u_2^7u_1^8$$
$$-0.03125u_3^{20}u_2^5u_1^{10} - 5.5u_3^{19}u_2^9u_1^7 +$$
$$3.5u_3^{19}u_2^7u_1^9 - 3.25u_3^{18}u_2^9u_1^8$$
$$-0.875u_3^{18}u_2^7u_1^{10} - 14u_3^{17}u_2^{11}u_1^7 +$$
$$7.375u_3^{17}u_2^9u_1^9 + 6.5u_3^{16}u_2^{11}u_1^8$$
$$-2.1875u_3^{16}u_2^9u_1^{10} - 7.75u_3^{15}u_2^{13}u_1^7 +$$
$$4u_3^{15}u_2^{11}u_1^9 + 5.625u_3^{14}u_2^{13}u_1^8$$
$$-1.875u_3^{14}u_2^{11}u_1^{10} + 0.1875u_3^{13}u_2^{13}u_1^9$$
$$-0.53125u_3^{12}u_2^{13}u_1^{10})$$
$$x_2^2x_1^7$$
$$+$$
$$(0.0625u_3^{24}u_2^4u_1^8 - 0.0625u_3^{23}u_2^4u_1^9 +$$
$$0.25u_3^{22}u_2^6u_1^8 + 0.015625u_3^{22}u_2^4u_1^{10}$$
$$-0.25u_3^{21}u_2^6u_1^9 + 1.875u_3^{20}u_2^8u_1^8 +$$
$$0.0625u_3^{20}u_2^6u_1^{10} - 1.875u_3^{19}u_2^8u_1^9 +$$
$$3.25u_3^{18}u_2^{10}u_1^8 + 0.46875u_3^{18}u_2^8u_1^{10}$$
$$-3.25u_3^{17}u_2^{10}u_1^9 + 1.5625u_3^{16}u_2^{12}u_1^8 +$$
$$0.8125u_3^{16}u_2^{10}u_1^{10} - 1.5625u_3^{15}u_2^{12}u_1^9 +$$
$$0.390625u_3^{14}u_2^{12}u_1^{10})$$
$$x_2^2x_1^6$$
$$+$$
$$(0.5u_3^{21}u_2^5u_1^6 - 0.5u_3^{20}u_2^5u_1^7 +$$
$$2u_3^{19}u_2^7u_1^6 + 0.125u_3^{19}u_2^5u_1^8$$
$$-2u_3^{18}u_2^7u_1^7 + 7u_3^{17}u_2^9u_1^6 + 0.5u_3^{17}u_2^7u_1^8$$
$$-7u_3^{16}u_2^9u_1^7 + 10u_3^{15}u_2^{11}u_1^6 +$$
$$1.75u_3^{15}u_2^9u_1^8 - 10u_3^{14}u_2^{11}u_1^7 +$$
$$4.5u_3^{13}u_2^{13}u_1^6 + 2.5u_3^{13}u_2^{11}u_1^8$$
$$-4.5u_3^{12}u_2^{13}u_1^7 + 1.125u_3^{11}u_2^{13}u_1^8)$$
$$x_2x_1^{11}$$
$$+$$

$(-0.25u_3^{22}u_2^4u_1^7 - 1.5u_3^{21}u_2^6u_1^6 +$

$0.25u_3^{21}u_2^4u_1^8 + 0.5u_3^{20}u_2^6u_1^7$

$-0.0625u_3^{20}u_2^4u_1^9 - 2u_3^{19}u_2^8u_1^6 +$

$0.625u_3^{19}u_2^6u_1^8 - 3.5u_3^{18}u_2^8u_1^7$

$-0.25u_3^{18}u_2^6u_1^9 - 7u_3^{17}u_2^{10}u_1^6 +$

$5u_3^{17}u_2^8u_1^8 - 3u_3^{16}u_2^{10}u_1^7$

$-1.375u_3^{16}u_2^8u_1^9 - 14u_3^{15}u_2^{12}u_1^6 +$

$8.25u_3^{15}u_2^{10}u_1^8 + 7.75u_3^{14}u_2^{12}u_1^7$

$-2.5u_3^{14}u_2^{10}u_1^9 - 7.5u_3^{13}u_2^{14}u_1^6 +$

$2.75u_3^{13}u_2^{12}u_1^8 + 6.5u_3^{12}u_2^{14}u_1^7$

$-1.5625u_3^{12}u_2^{12}u_1^9 - 0.875u_3^{11}u_2^{14}u_1^8$

$-0.25u_3^{10}u_2^{14}u_1^9)$

$x_2x_1^{10}$

$+$

$(u_3^{22}u_2^5u_1^7 + 2u_3^{21}u_2^7u_1^6 - u_3^{21}u_2^5u_1^8 +$

$0.25u_3^{20}u_2^5u_1^9 + 3u_3^{19}u_2^9u_1^6$

$-0.5u_3^{19}u_2^7u_1^8 + 5.5u_3^{18}u_2^9u_1^7$

$-0.5u_3^{18}u_2^7u_1^9 + 3u_3^{17}u_2^{11}u_1^6$

$-5.25u_3^{17}u_2^9u_1^8 + 0.25u_3^{17}u_2^7u_1^{10} +$

$12.5u_3^{16}u_2^{11}u_1^7 - 0.375u_3^{16}u_2^9u_1^9 +$

$5u_3^{15}u_2^{13}u_1^6 - 12.75u_3^{15}u_2^{11}u_1^8 +$

$0.625u_3^{15}u_2^9u_1^{10} + 3.5u_3^{14}u_2^{13}u_1^7 +$

$1.875u_3^{14}u_2^{11}u_1^9 + 3u_3^{13}u_2^{15}u_1^6$

$-6.75u_3^{13}u_2^{13}u_1^8 + 0.5u_3^{13}u_2^{11}u_1^{10}$

$-2.5u_3^{12}u_2^{15}u_1^7 + 1.625u_3^{12}u_2^{13}u_1^9 +$

$0.25u_3^{11}u_2^{15}u_1^8 + 0.125u_3^{11}u_2^{13}u_1^{10} +$

$0.125u_3^{10}u_2^{15}u_1^9)$

$x_2x_1^9$

$+$

$(-0.125u_3^{23}u_2^4u_1^8 - 0.75u_3^{22}u_2^6u_1^7 +$

$0.125u_3^{22}u_2^4u_1^9 + 0.25u_3^{21}u_2^6u_1^8$

$-0.03125u_3^{21}u_2^4u_1^{10} - u_3^{20}u_2^8u_1^7 +$

$0.3125u_3^{20}u_2^6u_1^9 - 1.75u_3^{19}u_2^8u_1^8$

$-0.125u_3^{19}u_2^6u_1^{10} - 3.5u_3^{18}u_2^{10}u_1^7 +$

$2.5u_3^{18}u_2^8u_1^9 - 1.5u_3^{17}u_2^{10}u_1^8$

$-0.6875u_3^{17}u_2^8u_1^{10} - 7u_3^{16}u_2^{12}u_1^7 +$

$4.125u_3^{16}u_2^{10}u_1^9 + 3.875u_3^{15}u_2^{12}u_1^8$

$-1.25u_3^{15}u_2^{10}u_1^{10} - 3.75u_3^{14}u_2^{14}u_1^7 +$

$1.375u_3^{14}u_2^{12}u_1^9 + 3.25u_3^{13}u_2^{14}u_1^8$

$-0.78125u_3^{13}u_2^{12}u_1^{10} - 0.4375u_3^{12}u_2^{14}u_1^9$

$-0.125u_3^{11}u_2^{14}u_1^{10})$

$x_2x_1^8$

$+$

$(0.125u_3^{23}u_2^5u_1^8 - 0.125u_3^{22}u_2^5u_1^9 +$
$0.5u_3^{21}u_2^7u_1^8 + 0.03125u_3^{21}u_2^5u_1^{10}$
$-0.5u_3^{20}u_2^7u_1^9 + 1.75u_3^{19}u_2^9u_1^8 +$
$0.125u_3^{19}u_2^7u_1^{10} - 1.75u_3^{18}u_2^9u_1^9 +$
$2.5u_3^{17}u_2^{11}u_1^8 + 0.4375u_3^{17}u_2^9u_1^{10}$
$-2.5u_3^{16}u_2^{11}u_1^9 + 1.125u_3^{15}u_2^{13}u_1^8 +$
$0.625u_3^{15}u_2^{11}u_1^{10} - 1.125u_3^{14}u_2^{13}u_1^9 +$
$0.28125u_3^{13}u_2^{13}u_1^{10})$

$x_2x_1^7$

$+$

$(0.25u_3^{20}u_2^6u_1^6 - 0.25u_3^{19}u_2^6u_1^7 +$
$u_3^{18}u_2^8u_1^6 + 0.0625u_3^{18}u_2^6u_1^8$
$-u_3^{17}u_2^8u_1^7 + 2.5u_3^{16}u_2^{10}u_1^6 +$
$0.25u_3^{16}u_2^8u_1^8 - 2.5u_3^{15}u_2^{10}u_1^7 +$
$3u_3^{14}u_2^{12}u_1^6 + 0.625u_3^{14}u_2^{10}u_1^8$
$-3u_3^{13}u_2^{12}u_1^7 + 1.25u_3^{12}u_2^{14}u_1^6 +$
$0.75u_3^{12}u_2^{12}u_1^8 - 1.25u_3^{11}u_2^{14}u_1^7 +$
$0.3125u_3^{10}u_2^{14}u_1^8)$

x_1^{12}

$+$

$(-0.25u_3^{21}u_2^5u_1^7 - 0.5u_3^{20}u_2^7u_1^6 +$
$0.25u_3^{20}u_2^5u_1^8 - 0.5u_3^{19}u_2^7u_1^7$
$-0.0625u_3^{19}u_2^5u_1^9 - u_3^{18}u_2^9u_1^6 +$
$0.875u_3^{18}u_2^7u_1^8 - 1.5u_3^{17}u_2^9u_1^7$
$-0.25u_3^{17}u_2^7u_1^9 - 2u_3^{16}u_2^{11}u_1^6 +$
$2.25u_3^{16}u_2^9u_1^8 - u_3^{15}u_2^{11}u_1^7$
$-0.625u_3^{15}u_2^9u_1^9 - 3u_3^{14}u_2^{13}u_1^6 +$
$2.5u_3^{14}u_2^{11}u_1^8 + 1.75u_3^{13}u_2^{13}u_1^7$
$-0.75u_3^{13}u_2^{11}u_1^9 - 1.5u_3^{12}u_2^{15}u_1^6 +$
$0.5u_3^{12}u_2^{13}u_1^8 + 1.5u_3^{11}u_2^{15}u_1^7$
$-0.3125u_3^{11}u_2^{13}u_1^9 - 0.375u_3^{10}u_2^{15}u_1^8)$

x_1^{11}

$+$

$(0.0625u_3^{22}u_2^4u_1^8 + 0.5u_3^{21}u_2^6u_1^7$
$-0.0625u_3^{21}u_2^4u_1^9 + 0.5u_3^{20}u_2^8u_1^6$
$-0.25u_3^{20}u_2^6u_1^8 + 0.015625u_3^{20}u_2^4u_1^{10} +$
$u_3^{19}u_2^8u_1^7 - 0.125u_3^{19}u_2^6u_1^9 +$

$$u_3^{18}u_2^{10}u_1^6 - 0.75u_3^{18}u_2^8u_1^8 +$$
$$0.0625u_3^{18}u_2^6u_1^{10} + 2.5u_3^{17}u_2^{10}u_1^7$$
$$-0.25u_3^{17}u_2^8u_1^9 + u_3^{16}u_2^{12}u_1^6$$
$$-2.5u_3^{16}u_2^{10}u_1^8 + 0.15625u_3^{16}u_2^8u_1^{10} +$$
$$3.5u_3^{15}u_2^{12}u_1^7 + 0.125u_3^{15}u_2^{10}u_1^9 +$$
$$u_3^{14}u_2^{14}u_1^6 - 3.9375u_3^{14}u_2^{12}u_1^8 +$$
$$0.1875u_3^{14}u_2^{10}u_1^{10} + u_3^{13}u_2^{14}u_1^7 +$$
$$0.8125u_3^{13}u_2^{12}u_1^9 + 0.5u_3^{12}u_2^{16}u_1^6$$
$$-1.75u_3^{12}u_2^{14}u_1^8 + 0.078125u_3^{12}u_2^{12}u_1^{10}$$
$$-0.5u_3^{11}u_2^{16}u_1^7 + 0.5u_3^{11}u_2^{14}u_1^9 +$$
$$0.125u_3^{10}u_2^{16}u_1^8)$$
$$x_1^{10}$$
$$+$$
$$(-0.125u_3^{22}u_2^5u_1^8 - 0.25u_3^{21}u_2^7u_1^7 +$$
$$0.125u_3^{21}u_2^5u_1^9 - 0.25u_3^{20}u_2^7u_1^8$$
$$-0.03125u_3^{20}u_2^5u_1^{10} - 0.5u_3^{19}u_2^9u_1^7 +$$
$$0.4375u_3^{19}u_2^7u_1^9 - 0.75u_3^{18}u_2^9u_1^8$$
$$-0.125u_3^{18}u_2^7u_1^{10} - u_3^{17}u_2^{11}u_1^7 +$$
$$1.125u_3^{17}u_2^9u_1^9 - 0.5u_3^{16}u_2^{11}u_1^8$$
$$-0.3125u_3^{16}u_2^9u_1^{10} - 1.5u_3^{15}u_2^{13}u_1^7 +$$
$$1.25u_3^{15}u_2^{11}u_1^9 + 0.875u_3^{14}u_2^{13}u_1^8$$
$$-0.375u_3^{14}u_2^{11}u_1^{10} - 0.75u_3^{13}u_2^{15}u_1^7 +$$
$$0.25u_3^{13}u_2^{13}u_1^9 + 0.75u_3^{12}u_2^{15}u_1^8$$
$$-0.15625u_3^{12}u_2^{13}u_1^{10} - 0.1875u_3^{11}u_2^{15}u_1^9)$$
$$x_1^9$$
$$+$$
$$(0.0625u_3^{22}u_2^6u_1^8 - 0.0625u_3^{21}u_2^6u_1^9 +$$
$$0.25u_3^{20}u_2^8u_1^8 + 0.015625u_3^{20}u_2^6u_1^{10}$$
$$-0.25u_3^{19}u_2^8u_1^9 + 0.625u_3^{18}u_2^{10}u_1^8 +$$
$$0.0625u_3^{18}u_2^8u_1^{10} - 0.625u_3^{17}u_2^{10}u_1^9 +$$
$$0.75u_3^{16}u_2^{12}u_1^8 + 0.15625u_3^{16}u_2^{10}u_1^{10}$$
$$-0.75u_3^{15}u_2^{12}u_1^9 + 0.3125u_3^{14}u_2^{14}u_1^8 +$$
$$0.1875u_3^{14}u_2^{12}u_1^{10} - 0.3125u_3^{13}u_2^{14}u_1^9 +$$
$$0.078125u_3^{12}u_2^{14}u_1^{10})$$
$$x_1^8$$

8. Pseudo remainder with p_2 over variable x_2:

$$g = (0.25u_3^{26}u_2^6u_1^8 - 1.75u_3^{25}u_2^6u_1^9 +$$
$$1.5u_3^{24}u_2^8u_1^8 + 5.3125u_3^{24}u_2^6u_1^{10}$$

$$-9.5u_3^{23}u_2^8u_1^9 - 9.125u_3^{23}u_2^6u_1^{11} +$$
$$3.75u_3^{22}u_2^{10}u_1^8 + 26.375u_3^{22}u_2^8u_1^{10} +$$
$$9.6875u_3^{22}u_2^6u_1^{12} - 21.25u_3^{21}u_2^{10}u_1^9$$
$$-42u_3^{21}u_2^8u_1^{11} - 6.5u_3^{21}u_2^6u_1^{13} +$$
$$5u_3^{20}u_2^{12}u_1^8 + 54.1875u_3^{20}u_2^{10}u_1^{10} +$$
$$42u_3^{20}u_2^8u_1^{12} + 2.6875u_3^{20}u_2^6u_1^{14}$$
$$-25u_3^{19}u_2^{12}u_1^9 - 82.125u_3^{19}u_2^{10}u_1^{11}$$
$$-27u_3^{19}u_2^8u_1^{13} - 0.625u_3^{19}u_2^6u_1^{15} +$$
$$3.75u_3^{18}u_2^{14}u_1^8 + 59.25u_3^{18}u_2^{12}u_1^{10} +$$
$$81.4375u_3^{18}u_2^{10}u_1^{12} + 10.875u_3^{18}u_2^8u_1^{14} +$$
$$0.0625u_3^{18}u_2^6u_1^{16} - 16.25u_3^{17}u_2^{14}u_1^9$$
$$-87u_3^{17}u_2^{12}u_1^{11} - 54u_3^{17}u_2^{10}u_1^{13}$$
$$-2.5u_3^{17}u_2^8u_1^{15} + 1.5u_3^{16}u_2^{16}u_1^8 +$$
$$36.6875u_3^{16}u_2^{14}u_1^{10} + 85.5u_3^{16}u_2^{12}u_1^{12} +$$
$$23.125u_3^{16}u_2^{10}u_1^{14} + 0.25u_3^{16}u_2^8u_1^{16}$$
$$-5.5u_3^{15}u_2^{16}u_1^9 - 51.375u_3^{15}u_2^{14}u_1^{11}$$
$$-57u_3^{15}u_2^{12}u_1^{13} - 5.75u_3^{15}u_2^{10}u_1^{15} +$$
$$0.25u_3^{14}u_2^{18}u_1^8 + 12.375u_3^{14}u_2^{16}u_1^{10} +$$
$$46.5625u_3^{14}u_2^{14}u_1^{12} + 25u_3^{14}u_2^{12}u_1^{14} +$$
$$0.625u_3^{14}u_2^{10}u_1^{16} - 0.75u_3^{13}u_2^{18}u_1^9$$
$$-15u_3^{13}u_2^{16}u_1^{11} - 27.5u_3^{13}u_2^{14}u_1^{13}$$
$$-6.5u_3^{13}u_2^{12}u_1^{15} + 1.8125u_3^{12}u_2^{18}u_1^{10} +$$
$$10.5u_3^{12}u_2^{16}u_1^{12} + 10.6875u_3^{12}u_2^{14}u_1^{14} +$$
$$0.75u_3^{12}u_2^{12}u_1^{16} - 1.375u_3^{11}u_2^{18}u_1^{11}$$
$$-4u_3^{11}u_2^{16}u_1^{13} - 2.625u_3^{11}u_2^{14}u_1^{15} +$$
$$0.3125u_3^{10}u_2^{18}u_1^{12} + 0.625u_3^{10}u_2^{16}u_1^{14} +$$
$$0.3125u_3^{10}u_2^{14}u_1^{16})$$
$$x_1^{12}$$
$$+$$
$$(0.25u_3^{28}u_2^5u_1^8 - 2u_3^{27}u_2^5u_1^9 +$$
$$1.5u_3^{26}u_2^7u_1^8 + 7.0625u_3^{26}u_2^5u_1^{10}$$
$$-10.5u_3^{25}u_2^7u_1^9 - 14.4375u_3^{25}u_2^5u_1^{11} +$$
$$3.75u_3^{24}u_2^9u_1^8 + 32.875u_3^{24}u_2^7u_1^{10} +$$
$$18.8125u_3^{24}u_2^5u_1^{12} - 22.5u_3^{23}u_2^9u_1^9$$
$$-60.75u_3^{23}u_2^7u_1^{11} - 16.1875u_3^{23}u_2^5u_1^{13} +$$
$$5u_3^{22}u_2^{11}u_1^8 + 61.4375u_3^{22}u_2^9u_1^{10} +$$
$$73.375u_3^{22}u_2^7u_1^{12} + 9.1875u_3^{22}u_2^5u_1^{14}$$
$$-25u_3^{21}u_2^{11}u_1^9 - 102.6875u_3^{21}u_2^9u_1^{11}$$
$$-60.25u_3^{21}u_2^7u_1^{13} - 3.3125u_3^{21}u_2^5u_1^{15} +$$
$$3.75u_3^{20}u_2^{13}u_1^8 + 58.25u_3^{20}u_2^{11}u_1^{10} +$$

$118.6875u_3^{20}u_2^9u_1^{12} + 33.625u_3^{20}u_2^7u_1^{14} +$

$0.6875u_3^{20}u_2^5u_1^{16} - 15u_3^{19}u_2^{13}u_1^9$

$-86u_3^{19}u_2^{11}u_1^{11} - 99.5625u_3^{19}u_2^9u_1^{13}$

$-12.25u_3^{19}u_2^7u_1^{15} - 0.0625u_3^{19}u_2^5u_1^{17} +$

$1.5u_3^{18}u_2^{15}u_1^8 + 28.9375u_3^{18}u_2^{13}u_1^{10} +$

$91.25u_3^{18}u_2^{11}u_1^{12} + 60u_3^{18}u_2^9u_1^{14} +$

$2.625u_3^{18}u_2^7u_1^{16} - 4.5u_3^{17}u_2^{15}u_1^9$

$-32.8125u_3^{17}u_2^{13}u_1^{11} - 74u_3^{17}u_2^{11}u_1^{13}$

$-24.375u_3^{17}u_2^9u_1^{15} - 0.25u_3^{17}u_2^7u_1^{17} +$

$0.25u_3^{16}u_2^{17}u_1^8 + 6.875u_3^{16}u_2^{15}u_1^{10} +$

$21.1875u_3^{16}u_2^{13}u_1^{12} + 46.5u_3^{16}u_2^{11}u_1^{14} +$

$5.875u_3^{16}u_2^9u_1^{16} - 0.5u_3^{15}u_2^{17}u_1^9$

$-1.25u_3^{15}u_2^{15}u_1^{11} - 6.3125u_3^{15}u_2^{13}u_1^{13}$

$-21.25u_3^{15}u_2^{11}u_1^{15} - 0.625u_3^{15}u_2^9u_1^{17} +$

$0.5625u_3^{14}u_2^{17}u_1^{10} - 10.625u_3^{14}u_2^{15}u_1^{12} +$

$0.9375u_3^{14}u_2^{13}u_1^{14} + 6u_3^{14}u_2^{11}u_1^{16} +$

$1.9375u_3^{13}u_2^{17}u_1^{11} + 15.25u_3^{13}u_2^{15}u_1^{13}$

$-1.8125u_3^{13}u_2^{13}u_1^{15} - 0.75u_3^{13}u_2^{11}u_1^{17}$

$-4.6875u_3^{12}u_2^{17}u_1^{12} - 10.625u_3^{12}u_2^{15}u_1^{14} +$

$1.4375u_3^{12}u_2^{13}u_1^{16} + 3.0625u_3^{11}u_2^{17}u_1^{13} +$

$4u_3^{11}u_2^{15}u_1^{15} - 0.3125u_3^{11}u_2^{13}u_1^{17}$

$-0.625u_3^{10}u_2^{17}u_1^{14} - 0.625u_3^{10}u_2^{15}u_1^{16})$

x_1^{11}

$+$

$(0.0625u_3^{30}u_2^4u_1^8 - 0.5625u_3^{29}u_2^4u_1^9 +$

$0.375u_3^{28}u_2^6u_1^8 + 2.265625u_3^{28}u_2^4u_1^{10}$

$-2.625u_3^{27}u_2^6u_1^9 - 5.375u_3^{27}u_2^4u_1^{11} +$

$0.9375u_3^{26}u_2^8u_1^8 + 8.21875u_3^{26}u_2^6u_1^{10} +$

$8.3125u_3^{26}u_2^4u_1^{12} - 4.6875u_3^{25}u_2^8u_1^9$

$-15.4375u_3^{25}u_2^6u_1^{11} - 8.75u_3^{25}u_2^4u_1^{13} +$

$1.25u_3^{24}u_2^{10}u_1^8 + 8.859375u_3^{24}u_2^8u_1^{10} +$

$19.84375u_3^{24}u_2^6u_1^{12} + 6.34375u_3^{24}u_2^4u_1^{14}$

$-3.75u_3^{23}u_2^{10}u_1^9 - 6.5625u_3^{23}u_2^8u_1^{11}$

$-18.875u_3^{23}u_2^6u_1^{13} - 3.125u_3^{23}u_2^4u_1^{15} +$

$0.9375u_3^{22}u_2^{12}u_1^8 - 1.4375u_3^{22}u_2^{10}u_1^{10}$

$-0.96875u_3^{22}u_2^8u_1^{12} + 13.71875u_3^{22}u_2^6u_1^{14} +$

$u_3^{22}u_2^4u_1^{16} - 0.9375u_3^{21}u_2^{12}u_1^9 +$

$23.625u_3^{21}u_2^{10}u_1^{11} + 3.25u_3^{21}u_2^8u_1^{13}$

$-7.4375u_3^{21}u_2^6u_1^{15} - 0.1875u_3^{21}u_2^4u_1^{17} +$

$0.375u_3^{20}u_2^{14}u_1^8 - 9.265625u_3^{20}u_2^{12}u_1^{10}$

$$-51.5625u_3^{20}u_2^{10}u_1^{12} + 1.765625u_3^{20}u_2^{8}u_1^{14} +$$
$$2.78125u_3^{20}u_2^{6}u_1^{16} + 0.015625u_3^{20}u_2^{4}u_1^{18} +$$
$$0.375u_3^{19}u_2^{14}u_1^{9} + 36.5u_3^{19}u_2^{12}u_1^{11} +$$
$$60u_3^{19}u_2^{10}u_1^{13} - 5.375u_3^{19}u_2^{8}u_1^{15}$$
$$-0.625u_3^{19}u_2^{6}u_1^{17} + 0.0625u_3^{18}u_2^{16}u_1^{8}$$
$$-6.28125u_3^{18}u_2^{14}u_1^{10} - 69.125u_3^{18}u_2^{12}u_1^{12}$$
$$-41.375u_3^{18}u_2^{10}u_1^{14} + 3.875u_3^{18}u_2^{8}u_1^{16} +$$
$$0.0625u_3^{18}u_2^{6}u_1^{18} + 0.1875u_3^{17}u_2^{16}u_1^{9} +$$
$$20.8125u_3^{17}u_2^{14}u_1^{11} + 82u_3^{17}u_2^{12}u_1^{13} +$$
$$15.375u_3^{17}u_2^{10}u_1^{15} - 1.25u_3^{17}u_2^{8}u_1^{17}$$
$$-1.359375u_3^{16}u_2^{16}u_1^{10} - 36.78125u_3^{16}u_2^{14}u_1^{12}$$
$$-63.9375u_3^{16}u_2^{12}u_1^{14} - 1.5625u_3^{16}u_2^{10}u_1^{16} +$$
$$0.15625u_3^{16}u_2^{8}u_1^{18} + 4.4375u_3^{15}u_2^{16}u_1^{11} +$$
$$38.875u_3^{15}u_2^{14}u_1^{13} + 31.375u_3^{15}u_2^{12}u_1^{15}$$
$$-0.75u_3^{15}u_2^{10}u_1^{17} - 6.71875u_3^{14}u_2^{16}u_1^{12}$$
$$-27.21875u_3^{14}u_2^{14}u_1^{14} - 8.3125u_3^{14}u_2^{12}u_1^{16} +$$
$$0.1875u_3^{14}u_2^{10}u_1^{18} + 3.5u_3^{13}u_2^{16}u_1^{13} +$$
$$13.5625u_3^{13}u_2^{14}u_1^{15} + 0.6875u_3^{13}u_2^{12}u_1^{17} +$$
$$0.953125u_3^{12}u_2^{16}u_1^{14} - 4.34375u_3^{12}u_2^{14}u_1^{16} +$$
$$0.078125u_3^{12}u_2^{12}u_1^{18} - 1.375u_3^{11}u_2^{16}u_1^{15} +$$
$$0.625u_3^{11}u_2^{14}u_1^{17} + 0.3125u_3^{10}u_2^{16}u_1^{16})$$
$$x_1^{10}$$
$$+$$
$$(0.125u_3^{29}u_2^{5}u_1^{9} - u_3^{28}u_2^{5}u_1^{10} +$$
$$0.625u_3^{27}u_2^{7}u_1^{9} + 3.53125u_3^{27}u_2^{5}u_1^{11}$$
$$-4.5u_3^{26}u_2^{7}u_1^{10} - 7.21875u_3^{26}u_2^{5}u_1^{12} +$$
$$1.25u_3^{25}u_2^{9}u_1^{9} + 14.53125u_3^{25}u_2^{7}u_1^{11} +$$
$$9.40625u_3^{25}u_2^{5}u_1^{13} - 8u_3^{24}u_2^{9}u_1^{10}$$
$$-27.71875u_3^{24}u_2^{7}u_1^{12} - 8.09375u_3^{24}u_2^{5}u_1^{14} +$$
$$1.25u_3^{23}u_2^{11}u_1^{9} + 23.3125u_3^{23}u_2^{9}u_1^{11} +$$
$$34.5u_3^{23}u_2^{7}u_1^{13} + 4.59375u_3^{23}u_2^{5}u_1^{15}$$
$$-7u_3^{22}u_2^{11}u_1^{10} - 41.6875u_3^{22}u_2^{9}u_1^{12}$$
$$-29.0625u_3^{22}u_2^{7}u_1^{14} - 1.65625u_3^{22}u_2^{5}u_1^{16} +$$
$$0.625u_3^{21}u_2^{13}u_1^{9} + 18.0625u_3^{21}u_2^{11}u_1^{11} +$$
$$51.5625u_3^{21}u_2^{9}u_1^{13} + 16.53125u_3^{21}u_2^{7}u_1^{15} +$$
$$0.34375u_3^{21}u_2^{5}u_1^{17} - 3u_3^{20}u_2^{13}u_1^{10}$$
$$-28.9375u_3^{20}u_2^{11}u_1^{12} - 45.9375u_3^{20}u_2^{9}u_1^{14}$$
$$-6.09375u_3^{20}u_2^{7}u_1^{16} - 0.03125u_3^{20}u_2^{5}u_1^{18} +$$
$$0.125u_3^{19}u_2^{15}u_1^{9} + 6.65625u_3^{19}u_2^{13}u_1^{11} +$$
$$33.25u_3^{19}u_2^{11}u_1^{13} + 28.9375u_3^{19}u_2^{9}u_1^{15} +$$

$1.3125u_3^{19}u_2^7u_1^{17} - 0.5u_3^{18}u_2^{15}u_1^{10}$

$-7.59375u_3^{18}u_2^{13}u_1^{12} - 29.875u_3^{18}u_2^{11}u_1^{14}$

$-12.0625u_3^{18}u_2^9u_1^{16} - 0.125u_3^{18}u_2^7u_1^{18} +$

$0.90625u_3^{17}u_2^{15}u_1^{11} + 2.78125u_3^{17}u_2^{13}u_1^{13} +$

$20.9375u_3^{17}u_2^{11}u_1^{15} + 2.9375u_3^{17}u_2^9u_1^{17} +$

$0.15625u_3^{16}u_2^{15}u_1^{12} + 2.28125u_3^{16}u_2^{13}u_1^{14}$

$-10.3125u_3^{16}u_2^{11}u_1^{16} - 0.3125u_3^{16}u_2^9u_1^{18}$

$-4u_3^{15}u_2^{15}u_1^{13} - 1.78125u_3^{15}u_2^{13}u_1^{15} +$

$3u_3^{15}u_2^{11}u_1^{17} + 7.1875u_3^{14}u_2^{15}u_1^{14}$

$-0.53125u_3^{14}u_2^{13}u_1^{16} - 0.375u_3^{14}u_2^{11}u_1^{18}$

$-5.71875u_3^{13}u_2^{15}u_1^{15} + 0.71875u_3^{13}u_2^{13}u_1^{17} +$

$2.15625u_3^{12}u_2^{15}u_1^{16} - 0.15625u_3^{12}u_2^{13}u_1^{18}$

$-0.3125u_3^{11}u_2^{15}u_1^{17})$

x_1^9

$+$

$(0.0625u_3^{28}u_2^6u_1^{10} - 0.4375u_3^{27}u_2^6u_1^{11} +$

$0.25u_3^{26}u_2^8u_1^{10} + 1.328125u_3^{26}u_2^6u_1^{12}$

$-1.75u_3^{25}u_2^8u_1^{11} - 2.28125u_3^{25}u_2^6u_1^{13} +$

$0.375u_3^{24}u_2^{10}u_1^{10} + 5.3125u_3^{24}u_2^8u_1^{12} +$

$2.421875u_3^{24}u_2^6u_1^{14} - 2.625u_3^{23}u_2^{10}u_1^{11}$

$-9.125u_3^{23}u_2^8u_1^{13} - 1.625u_3^{23}u_2^6u_1^{15} +$

$0.25u_3^{22}u_2^{12}u_1^{10} + 8.21875u_3^{22}u_2^{10}u_1^{12} +$

$9.6875u_3^{22}u_2^8u_1^{14} + 0.671875u_3^{22}u_2^6u_1^{16}$

$-1.75u_3^{21}u_2^{12}u_1^{11} - 14.9375u_3^{21}u_2^{10}u_1^{13}$

$-6.5u_3^{21}u_2^8u_1^{15} - 0.15625u_3^{21}u_2^6u_1^{17} +$

$0.0625u_3^{20}u_2^{14}u_1^{10} + 5.8125u_3^{20}u_2^{12}u_1^{12} +$

$17.09375u_3^{20}u_2^{10}u_1^{14} + 2.6875u_3^{20}u_2^8u_1^{16} +$

$0.015625u_3^{20}u_2^6u_1^{18} - 0.4375u_3^{19}u_2^{14}u_1^{11}$

$-11.625u_3^{19}u_2^{12}u_1^{13} - 12.5u_3^{19}u_2^{10}u_1^{15}$

$-0.625u_3^{19}u_2^8u_1^{17} + 1.578125u_3^{18}u_2^{14}u_1^{12} +$

$14.8125u_3^{18}u_2^{12}u_1^{14} + 5.65625u_3^{18}u_2^{10}u_1^{16} +$

$0.0625u_3^{18}u_2^8u_1^{18} - 3.53125u_3^{17}u_2^{14}u_1^{13}$

$-12u_3^{17}u_2^{12}u_1^{15} - 1.4375u_3^{17}u_2^{10}u_1^{17} +$

$4.984375u_3^{16}u_2^{14}u_1^{14} + 5.9375u_3^{16}u_2^{12}u_1^{16} +$

$0.15625u_3^{16}u_2^{10}u_1^{18} - 4.375u_3^{15}u_2^{14}u_1^{15}$

$-1.625u_3^{15}u_2^{12}u_1^{17} + 2.296875u_3^{14}u_2^{14}u_1^{16} +$

$0.1875u_3^{14}u_2^{12}u_1^{18} - 0.65625u_3^{13}u_2^{14}u_1^{17} +$

$0.078125u_3^{12}u_2^{14}u_1^{18})$

x_1^8

9. Pseudo remainder with p_1 over variable x_1:

$$g \quad = \quad 0$$

5 Prover results

Status: Theorem has been proved.

Space Complexity: The biggest polynomial obtained during prover execution contains 888 terms.

Time Complexity: Time spent by the prover is 0.582 seconds.

6 NDG Conditions

NDG Conditions in readable form

- Points B, C and C1 are not collinear

- Points B, C and C1 are not collinear

- Points F, B, C and C1 are not collinear

- Points F, B, C and C1 are not collinear

- Line through points D and A is not parallel with line through points E and B

- Points D and A are not identical

Time spent for processing NDG Conditions

- 0.878 seconds