

Minimal Constraint Subsets Detected for differential trail in Table 8 DDH21+

the 0 Th Minimal constraint set is:

$$\begin{aligned}y^0_0 + x^1_4 + k1_0 + k2_0_0 &= 0 \\y^0_0 + y^0_{10} + x^1_{12} + k1_0 + k2_0_0 &= 0 \\y^0_2 + x^1_6 + k1_2 + k2_2_0 &= 0 \\y^0_2 + [y^0_8] + [x^1_{14}] + k1_2 + k2_2_0 &= 0 \\y^0_5 + [y^0_8] + x^1_{10} + k1_5 + k2_5_0 &= 0 \\y^1_0 + y^1_{10} + x^2_{12} + k1_9 + k2_9_0 &= 0 \\y^1_1 + y^1_{11} + [y^1_{14}] + [x^2_1] + k1_{15} + k2_{15}_0 &= 0 \\y^1_1 + x^2_5 + k1_{15} + k2_{15}_0 &= 0 \\y^1_3 + y^1_9 + y^1_{12} + [x^2_3] + k1_{13} + k2_{13}_0 &= 0 \\y^1_3 + y^1_9 + [x^2_{15}] + k1_{13} + k2_{13}_0 &= 0 \\y^1_4 + y^1_{11} + x^2_9 + k1_{10} + k2_{10}_0 &= 0 \\y^1_6 + y^1_9 + x^2_{11} + k1_{12} + k2_{12}_0 &= 0 \\[y^2_1] + y^2_{11} + x^3_{13} + k1_7 + k2_7_1 &= 0 \\y^2_2 + y^2_8 + [y^2_{15}] + [x^3_2] + k1_0 + k2_0_1 &= 0 \\y^2_2 + x^3_6 + k1_0 + k2_0_1 &= 0 \\[y^2_3] + y^2_9 + y^2_{12} + x^3_3 + k1_5 + k2_5_1 &= 0 \\y^2_5 + y^2_8 + x^3_{10} + k1_6 + k2_6_1 &= 0 \\y^3_0 + y^3_{10} + y^3_{13} + x^4_0 + k1_{15} + k2_{15}_1 &= 0 \\y^3_0 + x^4_4 + k1_{15} + k2_{15}_1 &= 0 \\[y^3_2] + [x^4_6] + k1_9 + k2_9_1 &= 0 \\y^3_3 + y^3_9 + x^4_{15} + k1_{14} + k2_{14}_1 &= 0 \\y^3_6 + y^3_9 + x^4_{11} + k1_{10} + k2_{10}_1 &= 0 \\y^4_0 + [x^5_4] + k1_7 + k2_7_2 &= 0 \\y^4_2 + y^4_8 + y^4_{15} + x^5_2 + k1_1 + k2_1_2 &= 0 \\y^4_2 + y^4_8 + x^5_{14} + k1_1 + k2_1_2 &= 0 \\y^4_3 + x^5_7 + k1_6 + k2_6_2 &= 0 \\y^4_3 + y^4_9 + x^5_{15} + k1_6 + k2_6_2 &= 0 \\y^4_4 + y^4_{11} + x^5_9 + k1_0 + k2_0_2 &= 0 \\[y^4_6] + y^4_9 + [x^5_{11}] + k1_2 + k2_2_2 &= 0 \\y^5_0 + x^6_4 + k1_{11} + k2_{11}_2 &= 0 \\y^5_0 + y^5_{10} + x^6_{12} + k1_{11} + k2_{11}_2 &= 0 \\y^5_1 + [y^5_{11}] + y^5_{14} + [x^6_1] + k1_{13} + k2_{13}_2 &= 0 \\y^5_1 + [y^5_{11}] + [x^6_{13}] + k1_{13} + k2_{13}_2 &= 0 \\y^5_2 + y^5_8 + y^5_{15} + x^6_2 + k1_{15} + k2_{15}_2 &= 0 \\y^5_2 + x^6_6 + k1_{15} + k2_{15}_2 &= 0 \\y^5_2 + y^5_8 + x^6_{14} + k1_{15} + k2_{15}_2 &= 0 \\y^5_3 + x^6_7 + k1_{12} + k2_{12}_2 &= 0 \\y^5_3 + y^5_9 + x^6_{15} + k1_{12} + k2_{12}_2 &= 0 \\[y^5_4] + [y^5_{11}] + x^6_9 + k1_9 + k2_9_2 &= 0 \\y^5_7 + y^5_{10} + x^6_8 + k1_{14} + k2_{14}_2 &= 0 \\y^6_0 + y^6_{10} + [y^6_{13}] + [x^7_0] + k1_3 + k2_3_3 &= 0 \\y^6_0 + x^7_4 + k1_3 + k2_3_3 &= 0\end{aligned}$$

$$\begin{aligned}
&[y^6_1] + y^6_{11} + y^6_{14} + x^7_1 + k1_5 + k2_{5_3} = 0 \\
&y^6_2 + y^6_8 + y^6_{15} + x^7_2 + k1_7 + k2_{7_3} = 0 \\
&y^6_3 + y^6_9 + y^6_{12} + x^7_3 + k1_4 + k2_{4_3} = 0 \\
&y^6_3 + y^6_9 + x^7_{15} + k1_4 + k2_{4_3} = 0 \\
&y^6_4 + y^6_{11} + x^7_9 + k1_1 + k2_{1_3} = 0 \\
&y^6_6 + y^6_9 + x^7_{11} + k1_0 + k2_{0_3} = 0 \\
&y^6_7 + y^6_{10} + x^7_8 + k1_6 + k2_{6_3} = 0 \\
&[y^7_0] + x^8_4 + k1_{13} + k2_{13_3} = 0 \\
&y^7_1 + x^8_5 + k1_{14} + k2_{14_3} = 0 \\
&y^7_2 + y^7_8 + y^7_{15} + x^8_2 + k1_{11} + k2_{11_3} = 0 \\
&y^7_3 + y^7_9 + x^8_{15} + k1_{10} + k2_{10_3} = 0 \\
&y^7_4 + y^7_{11} + x^8_9 + k1_{15} + k2_{15_3} = 0 \\
&y^8_2 + y^8_8 + y^8_{15} + x^9_2 + k1_3 + k2_{3_4} = 0 \\
&y^8_3 + x^9_7 + k1_2 + k2_{2_4} = 0 \\
&y^8_3 + y^8_9 + x^9_{15} + k1_2 + k2_{2_4} = 0 \\
&y^8_4 + y^8_{11} + x^9_9 + k1_7 + k2_{7_4} = 0 \\
&y^8_5 + y^8_8 + x^9_{10} + k1_0 + k2_{0_4} = 0 \\
&y^9_2 + y^9_8 + y^9_{15} + [x^{10}_2] + k1_{13} + k2_{13_4} = 0 \\
&y^9_3 + x^{10}_7 + k1_8 + k2_{8_4} = 0 \\
&y^9_3 + y^9_9 + x^{10}_{15} + k1_8 + k2_{8_4} = 0 \\
&y^9_5 + y^9_8 + x^{10}_{10} + k1_9 + k2_{9_4} = 0 \\
&y^9_7 + y^9_{10} + x^{10}_8 + k1_{10} + k2_{10_4} = 0 \\
&[y^{10}_2] + y^{10}_8 + y^{10}_{15} + x^{11}_2 + k1_5 + k2_{5_5} = 0 \\
&y^{10}_7 + y^{10}_{10} + x^{11}_8 + k1_2 + k2_{2_5} = 0 \\
&y^{11}_2 + y^{11}_8 + y^{11}_{15} + x^{12}_2 + k1_{14} + k2_{14_5} = 0 \\
&y^{14}_1 + x^{15}_5 + k1_0 + k2_{0_7} = 0 \\
&y^{14}_2 + y^{14}_8 + y^{14}_{15} + x^{15}_2 + k1_4 + k2_{4_7} = 0 \\
&y^{14}_6 + y^{14}_9 + x^{15}_{11} + k1_5 + k2_{5_7} = 0 \\
&S(x^0_1) + y^0_1 = 0 \\
&S(x^0_3) + y^0_3 = 0 \\
&S(x^0_5) + y^0_5 = 0 \\
&S(x^0_9) + y^0_9 = 0 \\
&S(x^0_{12}) + y^0_{12} = 0 \\
&S(x^1_3) + y^1_3 = 0 \\
&S(x^1_6) + y^1_6 = 0 \\
&S(x^1_{10}) + y^1_{10} = 0 \\
&S(x^2_4) + y^2_4 = 0 \\
&S(x^2_6) + y^2_6 = 0 \\
&S(x^2_{11}) + y^2_{11} = 0 \\
&S([x^2_{15}]) + [y^2_{15}] = 0 \\
&S([x^3_2]) + [y^3_2] = 0 \\
&S(x^3_4) + y^3_4 = 0 \\
&S(x^3_7) + y^3_7 = 0 \\
&S(x^3_9) + y^3_9 = 0
\end{aligned}$$

$$\begin{aligned}
S(x^{3_{11}}) + y^{3_{11}} &= 0 \\
S(x^{3_{14}}) + y^{3_{14}} &= 0 \\
S(x^{3_{15}}) + y^{3_{15}} &= 0 \\
S(x^{4_1}) + y^{4_1} &= 0 \\
S(x^{4_2}) + y^{4_2} &= 0 \\
S(x^{4_4}) + y^{4_4} &= 0 \\
S([x^{4_6}]) + [y^{4_6}] &= 0 \\
S(x^{4_7}) + y^{4_7} &= 0 \\
S(x^{4_8}) + y^{4_8} &= 0 \\
S(x^{4_9}) + y^{4_9} &= 0 \\
S(x^{4_{12}}) + y^{4_{12}} &= 0 \\
S(x^{4_{13}}) + y^{4_{13}} &= 0 \\
S(x^{4_{14}}) + y^{4_{14}} &= 0 \\
S(x^{4_{15}}) + y^{4_{15}} &= 0 \\
S(x^{5_0}) + y^{5_0} &= 0 \\
S(x^{5_1}) + y^{5_1} &= 0 \\
S(x^{5_3}) + y^{5_3} &= 0 \\
S([x^{5_4}]) + [y^{5_4}] &= 0 \\
S(x^{5_8}) + y^{5_8} &= 0 \\
S(x^{5_9}) + y^{5_9} &= 0 \\
S([x^{5_{11}}]) + [y^{5_{11}}] &= 0 \\
S(x^{5_{15}}) + y^{5_{15}} &= 0 \\
S(x^{6_2}) + y^{6_2} &= 0 \\
S(x^{6_4}) + y^{6_4} &= 0 \\
S(x^{6_5}) + y^{6_5} &= 0 \\
S(x^{6_9}) + y^{6_9} &= 0 \\
S(x^{6_{15}}) + y^{6_{15}} &= 0 \\
S(x^{7_2}) + y^{7_2} &= 0 \\
S(x^{7_7}) + y^{7_7} &= 0 \\
S(x^{7_9}) + y^{7_9} &= 0 \\
S(x^{7_{10}}) + y^{7_{10}} &= 0 \\
S(x^{7_{15}}) + y^{7_{15}} &= 0 \\
S(x^{8_2}) + y^{8_2} &= 0 \\
S(x^{8_7}) + y^{8_7} &= 0 \\
S(x^{8_8}) + y^{8_8} &= 0 \\
S(x^{8_{10}}) + y^{8_{10}} &= 0 \\
S(x^{8_{15}}) + y^{8_{15}} &= 0 \\
S(x^{9_2}) + y^{9_2} &= 0 \\
S(x^{9_8}) + y^{9_8} &= 0
\end{aligned}$$

the 1 Th Minimal constraint set is:

$$\begin{aligned}
y^{0_2} + x^{1_6} + k1_2 + k2_2 &= 0 \\
y^{0_2} + [y^{0_8}] + [x^{1_{14}}] + k1_2 + k2_2 &= 0 \\
y^{0_5} + [y^{0_8}] + x^{1_{10}} + k1_5 + k2_5 &= 0 \\
y^{1_0} + y^{1_{10}} + x^{2_{12}} + k1_9 + k2_9 &= 0
\end{aligned}$$

$$\begin{aligned}
&y^{1_1} + y^{1_{11}} + [y^{1_{14}}] + [x^{2_1}] + k_{1_{15}} + k_{2_{15_0}} = 0 \\
&y^{1_1} + y^{1_{11}} + x^{2_{13}} + k_{1_{15}} + k_{2_{15_0}} = 0 \\
&y^{1_6} + y^{1_9} + x^{2_{11}} + k_{1_{12}} + k_{2_{12_0}} = 0 \\
&y^{2_0} + y^{2_{10}} + y^{2_{13}} + x^{3_0} + k_{1_1} + k_{2_{1_1}} = 0 \\
&y^{2_0} + y^{2_{10}} + x^{3_{12}} + k_{1_1} + k_{2_{1_1}} = 0 \\
&[y^{2_1}] + y^{2_{11}} + x^{3_{13}} + k_{1_7} + k_{2_{7_1}} = 0 \\
&[y^{2_3}] + y^{2_9} + y^{2_{12}} + x^{3_3} + k_{1_5} + k_{2_{5_1}} = 0 \\
&[y^{2_3}] + y^{2_9} + x^{3_{15}} + k_{1_5} + k_{2_{5_1}} = 0 \\
&y^{2_4} + y^{2_{11}} + x^{3_9} + k_{1_2} + k_{2_{2_1}} = 0 \\
&y^{3_0} + y^{3_{10}} + y^{3_{13}} + x^{4_0} + k_{1_{15}} + k_{2_{15_1}} = 0 \\
&y^{3_0} + x^{4_4} + k_{1_{15}} + k_{2_{15_1}} = 0 \\
&y^{3_0} + y^{3_{10}} + x^{4_{12}} + k_{1_{15}} + k_{2_{15_1}} = 0 \\
&y^{3_1} + x^{4_5} + k_{1_{11}} + k_{2_{11_1}} = 0 \\
&[y^{3_2}] + [y^{3_8}] + y^{3_{15}} + x^{4_2} + k_{1_9} + k_{2_{9_1}} = 0 \\
&[y^{3_2}] + [x^{4_6}] + k_{1_9} + k_{2_{9_1}} = 0 \\
&[y^{3_2}] + [y^{3_8}] + x^{4_{14}} + k_{1_9} + k_{2_{9_1}} = 0 \\
&y^{3_3} + y^{3_9} + y^{3_{12}} + x^{4_3} + k_{1_{14}} + k_{2_{14_1}} = 0 \\
&y^{4_1} + y^{4_{11}} + y^{4_{14}} + x^{5_1} + k_{1_3} + k_{2_{3_2}} = 0 \\
&y^{4_1} + x^{5_5} + k_{1_3} + k_{2_{3_2}} = 0 \\
&y^{4_2} + y^{4_8} + x^{5_{14}} + k_{1_1} + k_{2_{1_2}} = 0 \\
&y^{4_3} + y^{4_9} + y^{4_{12}} + x^{5_3} + k_{1_6} + k_{2_{6_2}} = 0 \\
&y^{4_4} + y^{4_{11}} + x^{5_9} + k_{1_0} + k_{2_{0_2}} = 0 \\
&y^{4_5} + y^{4_8} + x^{5_{10}} + k_{1_4} + k_{2_{4_2}} = 0 \\
&[y^{4_6}] + y^{4_9} + [x^{5_{11}}] + k_{1_2} + k_{2_{2_2}} = 0 \\
&y^{5_0} + x^{6_4} + k_{1_{11}} + k_{2_{11_2}} = 0 \\
&y^{5_0} + y^{5_{10}} + x^{6_{12}} + k_{1_{11}} + k_{2_{11_2}} = 0 \\
&y^{5_1} + [y^{5_{11}}] + y^{5_{14}} + [x^{6_1}] + k_{1_{13}} + k_{2_{13_2}} = 0 \\
&y^{5_2} + x^{6_6} + k_{1_{15}} + k_{2_{15_2}} = 0 \\
&y^{5_2} + y^{5_8} + x^{6_{14}} + k_{1_{15}} + k_{2_{15_2}} = 0 \\
&y^{5_3} + y^{5_9} + x^{6_{15}} + k_{1_{12}} + k_{2_{12_2}} = 0 \\
&y^{5_5} + y^{5_8} + x^{6_{10}} + k_{1_{10}} + k_{2_{10_2}} = 0 \\
&y^{6_0} + x^{7_4} + k_{1_3} + k_{2_{3_3}} = 0 \\
&y^{6_0} + y^{6_{10}} + x^{7_{12}} + k_{1_3} + k_{2_{3_3}} = 0 \\
&[y^{6_1}] + y^{6_{11}} + y^{6_{14}} + x^{7_1} + k_{1_5} + k_{2_{5_3}} = 0 \\
&y^{6_2} + y^{6_8} + y^{6_{15}} + x^{7_2} + k_{1_7} + k_{2_{7_3}} = 0 \\
&y^{6_2} + y^{6_8} + x^{7_{14}} + k_{1_7} + k_{2_{7_3}} = 0 \\
&y^{6_3} + y^{6_9} + y^{6_{12}} + x^{7_3} + k_{1_4} + k_{2_{4_3}} = 0 \\
&y^{6_3} + x^{7_7} + k_{1_4} + k_{2_{4_3}} = 0 \\
&y^{6_4} + y^{6_{11}} + x^{7_9} + k_{1_1} + k_{2_{1_3}} = 0 \\
&y^{6_6} + y^{6_9} + x^{7_{11}} + k_{1_0} + k_{2_{0_3}} = 0 \\
&[y^{7_0}] + x^{8_4} + k_{1_{13}} + k_{2_{13_3}} = 0 \\
&[y^{7_0}] + y^{7_{10}} + x^{8_{12}} + k_{1_{13}} + k_{2_{13_3}} = 0 \\
&y^{7_1} + y^{7_{11}} + y^{7_{14}} + x^{8_1} + k_{1_{14}} + k_{2_{14_3}} = 0 \\
&y^{7_1} + x^{8_5} + k_{1_{14}} + k_{2_{14_3}} = 0
\end{aligned}$$

$$\begin{aligned}
&y^7_1 + y^7_{11} + x^8_{13} + k1_{14} + k2_{14_3} = 0 \\
&y^7_3 + y^7_9 + y^7_{12} + x^8_3 + k1_{10} + k2_{10_3} = 0 \\
&y^7_4 + y^7_{11} + x^8_9 + k1_{15} + k2_{15_3} = 0 \\
&y^7_7 + y^7_{10} + x^8_8 + k1_{12} + k2_{12_3} = 0 \\
&y^8_0 + y^8_{10} + y^8_{13} + x^9_0 + k1_5 + k2_{5_4} = 0 \\
&y^8_0 + y^8_{10} + x^9_{12} + k1_5 + k2_{5_4} = 0 \\
&y^8_3 + y^8_9 + y^8_{12} + x^9_3 + k1_2 + k2_{2_4} = 0 \\
&y^8_4 + y^8_{11} + x^9_9 + k1_7 + k2_{7_4} = 0 \\
&y^8_5 + y^8_8 + x^9_{10} + k1_0 + k2_{0_4} = 0 \\
&y^9_0 + y^9_{10} + x^{10}_{12} + k1_{14} + k2_{14_4} = 0 \\
&y^9_3 + y^9_9 + y^9_{12} + x^{10}_3 + k1_8 + k2_{8_4} = 0 \\
&y^{10}_3 + y^{10}_9 + y^{10}_{12} + x^{11}_3 + k1_0 + k2_{0_5} = 0 \\
&y^{14}_2 + y^{14}_8 + y^{14}_{15} + x^{15}_2 + k1_4 + k2_{4_7} = 0 \\
&y^{14}_6 + y^{14}_9 + x^{15}_{11} + k1_5 + k2_{5_7} = 0 \\
&S(x^0_1) + y^0_1 = 0 \\
&S(x^0_{12}) + y^0_{12} = 0 \\
&S(x^0_{13}) + y^0_{13} = 0 \\
&S(x^1_0) + y^1_0 = 0 \\
&S(x^1_3) + y^1_3 = 0 \\
&S(x^1_9) + y^1_9 = 0 \\
&S(x^1_{12}) + y^1_{12} = 0 \\
&S(x^1_{15}) + y^1_{15} = 0 \\
&S(x^2_2) + y^2_2 = 0 \\
&S([x^2_3]) + [y^2_3] = 0 \\
&S(x^2_4) + y^2_4 = 0 \\
&S(x^2_5) + y^2_5 = 0 \\
&S(x^2_6) + y^2_6 = 0 \\
&S(x^2_{12}) + y^2_{12} = 0 \\
&S(x^2_{14}) + y^2_{14} = 0 \\
&S(x^3_1) + y^3_1 = 0 \\
&S(x^3_3) + y^3_3 = 0 \\
&S(x^3_5) + y^3_5 = 0 \\
&S(x^3_9) + y^3_9 = 0 \\
&S(x^3_{10}) + y^3_{10} = 0 \\
&S(x^3_{11}) + y^3_{11} = 0 \\
&S(x^3_{14}) + y^3_{14} = 0 \\
&S(x^4_1) + y^4_1 = 0 \\
&S(x^4_4) + y^4_4 = 0 \\
&S([x^4_6]) + [y^4_6] = 0 \\
&S([x^4_{10}]) + [y^4_{10}] = 0 \\
&S(x^4_{12}) + y^4_{12} = 0 \\
&S(x^4_{14}) + y^4_{14} = 0 \\
&S(x^4_{15}) + y^4_{15} = 0 \\
&S(x^5_1) + y^5_1 = 0
\end{aligned}$$

$$\begin{aligned}
S(x^5_3) + y^5_3 &= 0 \\
S([x^5_4]) + [y^5_4] &= 0 \\
S(x^5_7) + y^5_7 &= 0 \\
S(x^5_9) + y^5_9 &= 0 \\
S([x^5_{11}]) + [y^5_{11}] &= 0 \\
S(x^5_{12}) + y^5_{12} &= 0 \\
S(x^6_3) + y^6_3 &= 0 \\
S(x^6_4) + y^6_4 &= 0 \\
S(x^6_5) + y^6_5 &= 0 \\
S(x^6_8) + y^6_8 &= 0 \\
S(x^6_9) + y^6_9 &= 0 \\
S(x^6_{12}) + y^6_{12} &= 0 \\
S([x^6_{13}]) + [y^6_{13}] &= 0 \\
S([x^7_0]) + [y^7_0] &= 0 \\
S(x^7_3) + y^7_3 &= 0 \\
S(x^7_9) + y^7_9 &= 0 \\
S(x^7_{10}) + y^7_{10} &= 0 \\
S(x^7_{12}) + y^7_{12} &= 0 \\
S(x^8_3) + y^8_3 &= 0 \\
S(x^8_{12}) + y^8_{12} &= 0
\end{aligned}$$

the 2 Th Minimal constraint set is:

$$\begin{aligned}
y^0_0 + x^1_4 + k1_0 + k2_0_0 &= 0 \\
y^0_0 + y^0_{10} + x^1_{12} + k1_0 + k2_0_0 &= 0 \\
y^0_2 + x^1_6 + k1_2 + k2_2_0 &= 0 \\
y^0_2 + [y^0_8] + [x^1_{14}] + k1_2 + k2_2_0 &= 0 \\
y^0_5 + [y^0_8] + x^1_{10} + k1_5 + k2_5_0 &= 0 \\
y^1_1 + y^1_{11} + [y^1_{14}] + [x^2_1] + k1_{15} + k2_{15}_0 &= 0 \\
y^1_1 + x^2_5 + k1_{15} + k2_{15}_0 &= 0 \\
y^1_4 + y^1_{11} + x^2_9 + k1_{10} + k2_{10}_0 &= 0 \\
y^1_6 + y^1_9 + x^2_{11} + k1_{12} + k2_{12}_0 &= 0 \\
[y^2_1] + y^2_{11} + x^3_{13} + k1_7 + k2_7_1 &= 0 \\
y^2_2 + y^2_8 + [y^2_{15}] + [x^3_2] + k1_0 + k2_0_1 &= 0 \\
y^2_2 + x^3_6 + k1_0 + k2_0_1 &= 0 \\
[y^2_3] + x^3_7 + k1_5 + k2_5_1 &= 0 \\
[y^2_3] + y^2_9 + x^3_{15} + k1_5 + k2_5_1 &= 0 \\
y^2_4 + y^2_{11} + x^3_9 + k1_2 + k2_2_1 &= 0 \\
y^2_5 + y^2_8 + x^3_{10} + k1_6 + k2_6_1 &= 0 \\
[y^3_2] + [y^3_8] + y^3_{15} + x^4_2 + k1_9 + k2_9_1 &= 0 \\
[y^3_2] + [x^4_6] + k1_9 + k2_9_1 &= 0 \\
[y^3_2] + [y^3_8] + x^4_{14} + k1_9 + k2_9_1 &= 0 \\
y^3_6 + y^3_9 + x^4_{11} + k1_{10} + k2_{10}_1 &= 0 \\
y^3_7 + y^3_{10} + x^4_8 + k1_{13} + k2_{13}_1 &= 0 \\
y^4_1 + y^4_{11} + y^4_{14} + x^5_1 + k1_3 + k2_3_2 &= 0 \\
y^4_1 + x^5_5 + k1_3 + k2_3_2 &= 0
\end{aligned}$$

$$\begin{aligned}
&y^4_2 + y^4_8 + x^5_{14} + k1_1 + k2_{1_2} = 0 \\
&y^4_3 + x^5_7 + k1_6 + k2_{6_2} = 0 \\
&y^4_3 + y^4_9 + x^5_{15} + k1_6 + k2_{6_2} = 0 \\
&[y^4_6] + y^4_9 + [x^5_{11}] + k1_2 + k2_{2_2} = 0 \\
&y^5_0 + x^6_4 + k1_{11} + k2_{11_2} = 0 \\
&y^5_0 + y^5_{10} + x^6_{12} + k1_{11} + k2_{11_2} = 0 \\
&y^5_1 + [y^5_{11}] + y^5_{14} + [x^6_1] + k1_{13} + k2_{13_2} = 0 \\
&y^5_2 + y^5_8 + y^5_{15} + x^6_2 + k1_{15} + k2_{15_2} = 0 \\
&y^5_2 + x^6_6 + k1_{15} + k2_{15_2} = 0 \\
&y^5_5 + y^5_8 + x^6_{10} + k1_{10} + k2_{10_2} = 0 \\
&y^5_7 + y^5_{10} + x^6_8 + k1_{14} + k2_{14_2} = 0 \\
&y^6_0 + x^7_4 + k1_3 + k2_{3_3} = 0 \\
&y^6_0 + y^6_{10} + x^7_{12} + k1_3 + k2_{3_3} = 0 \\
&[y^6_1] + y^6_{11} + x^7_{13} + k1_5 + k2_{5_3} = 0 \\
&y^6_2 + y^6_8 + x^7_{14} + k1_7 + k2_{7_3} = 0 \\
&y^6_3 + y^6_9 + y^6_{12} + x^7_3 + k1_4 + k2_{4_3} = 0 \\
&y^6_3 + x^7_7 + k1_4 + k2_{4_3} = 0 \\
&y^6_4 + y^6_{11} + x^7_9 + k1_1 + k2_{1_3} = 0 \\
&y^6_6 + y^6_9 + x^7_{11} + k1_0 + k2_{0_3} = 0 \\
&[y^7_0] + y^7_{10} + y^7_{13} + x^8_0 + k1_{13} + k2_{13_3} = 0 \\
&[y^7_0] + x^8_4 + k1_{13} + k2_{13_3} = 0 \\
&y^7_1 + y^7_{11} + y^7_{14} + x^8_1 + k1_{14} + k2_{14_3} = 0 \\
&y^7_1 + y^7_{11} + x^8_{13} + k1_{14} + k2_{14_3} = 0 \\
&y^7_3 + y^7_9 + y^7_{12} + x^8_3 + k1_{10} + k2_{10_3} = 0 \\
&y^7_3 + x^8_7 + k1_{10} + k2_{10_3} = 0 \\
&y^7_3 + y^7_9 + x^8_{15} + k1_{10} + k2_{10_3} = 0 \\
&y^7_4 + y^7_{11} + x^8_9 + k1_{15} + k2_{15_3} = 0 \\
&y^7_6 + y^7_9 + x^8_{11} + k1_9 + k2_{9_3} = 0 \\
&y^7_7 + y^7_{10} + x^8_8 + k1_{12} + k2_{12_3} = 0 \\
&y^8_0 + y^8_{10} + y^8_{13} + x^9_0 + k1_5 + k2_{5_4} = 0 \\
&y^8_2 + y^8_8 + y^8_{15} + x^9_2 + k1_3 + k2_{3_4} = 0 \\
&y^8_2 + x^9_6 + k1_3 + k2_{3_4} = 0 \\
&y^8_3 + y^8_9 + x^9_{15} + k1_2 + k2_{2_4} = 0 \\
&y^8_4 + y^8_{11} + x^9_9 + k1_7 + k2_{7_4} = 0 \\
&y^8_7 + y^8_{10} + x^9_8 + k1_4 + k2_{4_4} = 0 \\
&y^9_0 + x^{10}_4 + k1_{14} + k2_{14_4} = 0 \\
&y^9_2 + y^9_8 + y^9_{15} + [x^{10}_2] + k1_{13} + k2_{13_4} = 0 \\
&y^9_6 + y^9_9 + x^{10}_{11} + k1_{15} + k2_{15_4} = 0 \\
&[y^{10}_2] + x^{11}_6 + k1_5 + k2_{5_5} = 0 \\
&y^{10}_4 + y^{10}_{11} + x^{11}_9 + k1_3 + k2_{3_5} = 0 \\
&y^{11}_6 + y^{11}_9 + x^{12}_{11} + k1_{11} + k2_{11_5} = 0 \\
&y^{14}_1 + x^{15}_5 + k1_0 + k2_{0_7} = 0 \\
&y^{14}_2 + y^{14}_8 + y^{14}_{15} + x^{15}_2 + k1_4 + k2_{4_7} = 0 \\
&y^{14}_6 + y^{14}_9 + x^{15}_{11} + k1_5 + k2_{5_7} = 0
\end{aligned}$$

$$\begin{aligned}
&S(x^{0_1}) + y^{0_1} = 0 \\
&S(x^{0_5}) + y^{0_5} = 0 \\
&S(x^{0_9}) + y^{0_9} = 0 \\
&S(x^{1_6}) + y^{1_6} = 0 \\
&S(x^{1_7}) + y^{1_7} = 0 \\
&S(x^{1_9}) + y^{1_9} = 0 \\
&S(x^{1_{10}}) + y^{1_{10}} = 0 \\
&S(x^{1_{15}}) + y^{1_{15}} = 0 \\
&S(x^{2_2}) + y^{2_2} = 0 \\
&S(x^{2_6}) + y^{2_6} = 0 \\
&S(x^{2_8}) + y^{2_8} = 0 \\
&S(x^{2_{11}}) + y^{2_{11}} = 0 \\
&S(x^{2_{14}}) + y^{2_{14}} = 0 \\
&S(x^{3_1}) + y^{3_1} = 0 \\
&S(x^{3_5}) + y^{3_5} = 0 \\
&S(x^{3_7}) + y^{3_7} = 0 \\
&S(x^{3_{11}}) + y^{3_{11}} = 0 \\
&S(x^{3_{14}}) + y^{3_{14}} = 0 \\
&S(x^{3_{15}}) + y^{3_{15}} = 0 \\
&S(x^{4_1}) + y^{4_1} = 0 \\
&S(x^{4_2}) + y^{4_2} = 0 \\
&S(x^{4_4}) + y^{4_4} = 0 \\
&S([x^{4_6}]) + [y^{4_6}] = 0 \\
&S(x^{4_8}) + y^{4_8} = 0 \\
&S([x^{4_{10}}]) + [y^{4_{10}}] = 0 \\
&S(x^{4_{12}}) + y^{4_{12}} = 0 \\
&S(x^{5_3}) + y^{5_3} = 0 \\
&S([x^{5_4}]) + [y^{5_4}] = 0 \\
&S(x^{5_7}) + y^{5_7} = 0 \\
&S(x^{5_9}) + y^{5_9} = 0 \\
&S([x^{5_{11}}]) + [y^{5_{11}}] = 0 \\
&S(x^{5_{12}}) + y^{5_{12}} = 0 \\
&S(x^{5_{13}}) + y^{5_{13}} = 0 \\
&S(x^{6_0}) + y^{6_0} = 0 \\
&S(x^{6_3}) + y^{6_3} = 0 \\
&S(x^{6_4}) + y^{6_4} = 0 \\
&S(x^{6_7}) + y^{6_7} = 0 \\
&S(x^{6_8}) + y^{6_8} = 0 \\
&S(x^{6_9}) + y^{6_9} = 0 \\
&S([x^{6_{13}}]) + [y^{6_{13}}] = 0 \\
&S(x^{6_{15}}) + y^{6_{15}} = 0 \\
&S([x^{7_0}]) + [y^{7_0}] = 0 \\
&S(x^{7_2}) + y^{7_2} = 0 \\
&S(x^{7_6}) + y^{7_6} = 0
\end{aligned}$$

$$\begin{aligned}
S(x^{7_8}) + y^{7_8} &= 0 \\
S(x^{7_9}) + y^{7_9} &= 0 \\
S(x^{7_{15}}) + y^{7_{15}} &= 0 \\
S(x^{8_2}) + y^{8_2} &= 0 \\
S(x^{8_4}) + y^{8_4} &= 0 \\
S(x^{8_{11}}) + y^{8_{11}} &= 0 \\
S(x^{9_6}) + y^{9_6} &= 0 \\
S(x^{9_9}) + y^{9_9} &= 0
\end{aligned}$$

the 3 Th Minimal constraint set is:

$$\begin{aligned}
y^{0_1} + x^{1_5} + k_{1_1} + k_{2_1_0} &= 0 \\
y^{0_1} + y^{0_{11}} + x^{1_{13}} + k_{1_1} + k_{2_1_0} &= 0 \\
y^{0_4} + y^{0_{11}} + x^{1_9} + k_{1_4} + k_{2_4_0} &= 0 \\
y^{1_0} + y^{1_{10}} + y^{1_{13}} + x^{2_0} + k_{1_9} + k_{2_9_0} &= 0 \\
y^{1_0} + y^{1_{10}} + x^{2_{12}} + k_{1_9} + k_{2_9_0} &= 0 \\
y^{1_2} + x^{2_6} + k_{1_8} + k_{2_8_0} &= 0 \\
y^{1_2} + y^{1_8} + x^{2_{14}} + k_{1_8} + k_{2_8_0} &= 0 \\
y^{1_3} + y^{1_9} + y^{1_{12}} + [x^{2_3}] + k_{1_{13}} + k_{2_{13_0}} &= 0 \\
y^{1_3} + y^{1_9} + [x^{2_{15}}] + k_{1_{13}} + k_{2_{13_0}} &= 0 \\
y^{1_5} + y^{1_8} + x^{2_{10}} + k_{1_{14}} + k_{2_{14_0}} &= 0 \\
y^{2_0} + y^{2_{10}} + x^{3_{12}} + k_{1_1} + k_{2_1_1} &= 0 \\
[y^{2_1}] + y^{2_{11}} + y^{2_{14}} + x^{3_1} + k_{1_7} + k_{2_7_1} &= 0 \\
[y^{2_1}] + y^{2_{11}} + x^{3_{13}} + k_{1_7} + k_{2_7_1} &= 0 \\
[y^{2_3}] + y^{2_9} + y^{2_{12}} + x^{3_3} + k_{1_5} + k_{2_5_1} &= 0 \\
y^{2_6} + y^{2_9} + x^{3_{11}} + k_{1_4} + k_{2_4_1} &= 0 \\
y^{3_0} + y^{3_{10}} + y^{3_{13}} + x^{4_0} + k_{1_{15}} + k_{2_{15_1}} &= 0 \\
y^{3_0} + y^{3_{10}} + x^{4_{12}} + k_{1_{15}} + k_{2_{15_1}} &= 0 \\
y^{3_1} + x^{4_5} + k_{1_{11}} + k_{2_{11_1}} &= 0 \\
y^{3_1} + y^{3_{11}} + x^{4_{13}} + k_{1_{11}} + k_{2_{11_1}} &= 0 \\
y^{3_3} + y^{3_9} + y^{3_{12}} + x^{4_3} + k_{1_{14}} + k_{2_{14_1}} &= 0 \\
y^{3_3} + x^{4_7} + k_{1_{14}} + k_{2_{14_1}} &= 0 \\
y^{3_3} + y^{3_9} + x^{4_{15}} + k_{1_{14}} + k_{2_{14_1}} &= 0 \\
y^{4_0} + [y^{4_{10}}] + y^{4_{13}} + x^{5_0} + k_{1_7} + k_{2_7_2} &= 0 \\
y^{4_2} + y^{4_8} + y^{4_{15}} + x^{5_2} + k_{1_1} + k_{2_1_2} &= 0 \\
y^{4_2} + x^{5_6} + k_{1_1} + k_{2_1_2} &= 0 \\
y^{4_3} + y^{4_9} + y^{4_{12}} + x^{5_3} + k_{1_6} + k_{2_6_2} &= 0 \\
y^{4_3} + x^{5_7} + k_{1_6} + k_{2_6_2} &= 0 \\
y^{4_3} + y^{4_9} + x^{5_{15}} + k_{1_6} + k_{2_6_2} &= 0 \\
y^{4_5} + y^{4_8} + x^{5_{10}} + k_{1_4} + k_{2_4_2} &= 0 \\
y^{4_7} + [y^{4_{10}}] + x^{5_8} + k_{1_5} + k_{2_5_2} &= 0 \\
y^{5_0} + x^{6_4} + k_{1_{11}} + k_{2_{11_2}} &= 0 \\
y^{5_2} + y^{5_8} + y^{5_{15}} + x^{6_2} + k_{1_{15}} + k_{2_{15_2}} &= 0 \\
y^{5_3} + y^{5_9} + x^{6_{15}} + k_{1_{12}} + k_{2_{12_2}} &= 0 \\
y^{5_6} + y^{5_9} + x^{6_{11}} + k_{1_8} + k_{2_8_2} &= 0 \\
y^{5_7} + y^{5_{10}} + x^{6_8} + k_{1_{14}} + k_{2_{14_2}} &= 0
\end{aligned}$$

$$y^{6_2} + y^{6_8} + y^{6_{15}} + x^{7_2} + k_{1_7} + k_{2_7_3} = 0$$

$$y^{6_4} + y^{6_{11}} + x^{7_9} + k_{1_1} + k_{2_1_3} = 0$$

$$y^{7_6} + y^{7_9} + x^{8_{11}} + k_{1_9} + k_{2_9_3} = 0$$

$$y^{14_1} + [y^{14_{11}}] + x^{15_{13}} + k_{1_0} + k_{2_0_7} = 0$$

$$y^{14_5} + y^{14_8} + x^{15_{10}} + k_{1_3} + k_{2_3_7} = 0$$

$$S(x^{0_0}) + y^{0_0} = 0$$

$$S(x^{0_3}) + y^{0_3} = 0$$

$$S(x^{0_6}) + y^{0_6} = 0$$

$$S(x^{0_{10}}) + y^{0_{10}} = 0$$

$$S(x^{0_{12}}) + y^{0_{12}} = 0$$

$$S(x^{0_{14}}) + y^{0_{14}} = 0$$

$$S(x^{1_3}) + y^{1_3} = 0$$

$$S(x^{1_{11}}) + y^{1_{11}} = 0$$

$$S(x^{1_{12}}) + y^{1_{12}} = 0$$

$$S([x^{2_3}]) + [y^{2_3}] = 0$$

$$S(x^{2_5}) + y^{2_5} = 0$$

$$S([x^{2_7}]) + [y^{2_7}] = 0$$

$$S(x^{2_{12}}) + y^{2_{12}} = 0$$

$$S(x^{2_{13}}) + y^{2_{13}} = 0$$

$$S([x^{2_{15}}]) + [y^{2_{15}}] = 0$$

$$S(x^{3_0}) + y^{3_0} = 0$$

$$S([x^{3_2}]) + [y^{3_2}] = 0$$

$$S(x^{3_3}) + y^{3_3} = 0$$

$$S(x^{3_6}) + y^{3_6} = 0$$

$$S(x^{3_7}) + y^{3_7} = 0$$

$$S([x^{3_8}]) + [y^{3_8}] = 0$$

$$S(x^{3_{10}}) + y^{3_{10}} = 0$$

$$S(x^{3_{15}}) + y^{3_{15}} = 0$$

$$S(x^{4_2}) + y^{4_2} = 0$$

$$S(x^{4_4}) + y^{4_4} = 0$$

$$S(x^{4_8}) + y^{4_8} = 0$$

$$S(x^{4_{11}}) + y^{4_{11}} = 0$$

$$S(x^{4_{15}}) + y^{4_{15}} = 0$$

$$S(x^{5_9}) + y^{5_9} = 0$$

the 4 Th Minimal constraint set is:

$$y^{0_1} + x^{1_5} + k_{1_1} + k_{2_1_0} = 0$$

$$y^{0_1} + y^{0_{11}} + x^{1_{13}} + k_{1_1} + k_{2_1_0} = 0$$

$$y^{0_2} + x^{1_6} + k_{1_2} + k_{2_2_0} = 0$$

$$y^{0_2} + [y^{0_8}] + [x^{1_{14}}] + k_{1_2} + k_{2_2_0} = 0$$

$$y^{0_4} + y^{0_{11}} + x^{1_9} + k_{1_4} + k_{2_4_0} = 0$$

$$y^{0_5} + [y^{0_8}] + x^{1_{10}} + k_{1_5} + k_{2_5_0} = 0$$

$$y^{1_0} + y^{1_{10}} + y^{1_{13}} + x^{2_0} + k_{1_9} + k_{2_9_0} = 0$$

$$y^{1_0} + y^{1_{10}} + x^{2_{12}} + k_{1_9} + k_{2_9_0} = 0$$

$$y^{1_1} + y^{1_{11}} + [y^{1_{14}}] + [x^{2_1}] + k_{1_{15}} + k_{2_{15}_0} = 0$$

$$\begin{aligned}
&y^{1_1} + y^{1_{11}} + x^{2_{13}} + k_{1_{15}} + k_{2_{15_0}} = 0 \\
&y^{1_2} + x^{2_6} + k_{1_8} + k_{2_{8_0}} = 0 \\
&y^{1_2} + y^{1_8} + x^{2_{14}} + k_{1_8} + k_{2_{8_0}} = 0 \\
&y^{1_3} + [x^{2_7}] + k_{1_{13}} + k_{2_{13_0}} = 0 \\
&y^{1_3} + y^{1_9} + [x^{2_{15}}] + k_{1_{13}} + k_{2_{13_0}} = 0 \\
&y^{1_5} + y^{1_8} + x^{2_{10}} + k_{1_{14}} + k_{2_{14_0}} = 0 \\
&y^{1_6} + y^{1_9} + x^{2_{11}} + k_{1_{12}} + k_{2_{12_0}} = 0 \\
&y^{2_0} + y^{2_{10}} + y^{2_{13}} + x^{3_0} + k_{1_1} + k_{2_{1_1}} = 0 \\
&y^{2_0} + x^{3_4} + k_{1_1} + k_{2_{1_1}} = 0 \\
&y^{2_0} + y^{2_{10}} + x^{3_{12}} + k_{1_1} + k_{2_{1_1}} = 0 \\
&[y^{2_1}] + y^{2_{11}} + y^{2_{14}} + x^{3_1} + k_{1_7} + k_{2_{7_1}} = 0 \\
&y^{2_2} + y^{2_8} + [y^{2_{15}}] + [x^{3_2}] + k_{1_0} + k_{2_{0_1}} = 0 \\
&y^{2_2} + y^{2_8} + x^{3_{14}} + k_{1_0} + k_{2_{0_1}} = 0 \\
&[y^{2_3}] + y^{2_9} + y^{2_{12}} + x^{3_3} + k_{1_5} + k_{2_{5_1}} = 0 \\
&[y^{2_3}] + x^{3_7} + k_{1_5} + k_{2_{5_1}} = 0 \\
&y^{2_4} + y^{2_{11}} + x^{3_9} + k_{1_2} + k_{2_{2_1}} = 0 \\
&y^{2_6} + y^{2_9} + x^{3_{11}} + k_{1_4} + k_{2_{4_1}} = 0 \\
&[y^{2_7}] + y^{2_{10}} + [x^{3_8}] + k_{1_3} + k_{2_{3_1}} = 0 \\
&y^{3_0} + y^{3_{10}} + x^{4_{12}} + k_{1_{15}} + k_{2_{15_1}} = 0 \\
&y^{3_1} + y^{3_{11}} + y^{3_{14}} + x^{4_1} + k_{1_{11}} + k_{2_{11_1}} = 0 \\
&y^{3_1} + x^{4_5} + k_{1_{11}} + k_{2_{11_1}} = 0 \\
&y^{3_1} + y^{3_{11}} + x^{4_{13}} + k_{1_{11}} + k_{2_{11_1}} = 0 \\
&[y^{3_2}] + [x^{4_6}] + k_{1_9} + k_{2_{9_1}} = 0 \\
&[y^{3_2}] + [y^{3_8}] + x^{4_{14}} + k_{1_9} + k_{2_{9_1}} = 0 \\
&y^{3_3} + y^{3_9} + y^{3_{12}} + x^{4_3} + k_{1_{14}} + k_{2_{14_1}} = 0 \\
&y^{3_4} + y^{3_{11}} + x^{4_9} + k_{1_8} + k_{2_{8_1}} = 0 \\
&y^{3_7} + y^{3_{10}} + x^{4_8} + k_{1_{13}} + k_{2_{13_1}} = 0 \\
&y^{4_0} + [y^{4_{10}}] + y^{4_{13}} + x^{5_0} + k_{1_7} + k_{2_{7_2}} = 0 \\
&y^{4_0} + [y^{4_{10}}] + x^{5_{12}} + k_{1_7} + k_{2_{7_2}} = 0 \\
&y^{4_1} + y^{4_{11}} + y^{4_{14}} + x^{5_1} + k_{1_3} + k_{2_{3_2}} = 0 \\
&y^{4_1} + x^{5_5} + k_{1_3} + k_{2_{3_2}} = 0 \\
&y^{4_1} + y^{4_{11}} + x^{5_{13}} + k_{1_3} + k_{2_{3_2}} = 0 \\
&y^{4_3} + y^{4_9} + y^{4_{12}} + x^{5_3} + k_{1_6} + k_{2_{6_2}} = 0 \\
&y^{4_3} + x^{5_7} + k_{1_6} + k_{2_{6_2}} = 0 \\
&y^{4_3} + y^{4_9} + x^{5_{15}} + k_{1_6} + k_{2_{6_2}} = 0 \\
&y^{4_5} + y^{4_8} + x^{5_{10}} + k_{1_4} + k_{2_{4_2}} = 0 \\
&[y^{4_6}] + y^{4_9} + [x^{5_{11}}] + k_{1_2} + k_{2_{2_2}} = 0 \\
&y^{5_0} + y^{5_{10}} + y^{5_{13}} + x^{6_0} + k_{1_{11}} + k_{2_{11_2}} = 0 \\
&y^{5_0} + x^{6_4} + k_{1_{11}} + k_{2_{11_2}} = 0 \\
&y^{5_0} + y^{5_{10}} + x^{6_{12}} + k_{1_{11}} + k_{2_{11_2}} = 0 \\
&y^{5_1} + [y^{5_{11}}] + [x^{6_{13}}] + k_{1_{13}} + k_{2_{13_2}} = 0 \\
&y^{5_2} + y^{5_8} + y^{5_{15}} + x^{6_2} + k_{1_{15}} + k_{2_{15_2}} = 0 \\
&y^{5_2} + x^{6_6} + k_{1_{15}} + k_{2_{15_2}} = 0 \\
&y^{5_3} + y^{5_9} + y^{5_{12}} + x^{6_3} + k_{1_{12}} + k_{2_{12_2}} = 0
\end{aligned}$$

$$\begin{aligned}
&y^5_3 + x^6_7 + k1_{12} + k2_{12_2} = 0 \\
&y^5_3 + y^5_9 + x^6_{15} + k1_{12} + k2_{12_2} = 0 \\
&y^5_5 + y^5_8 + x^6_{10} + k1_{10} + k2_{10_2} = 0 \\
&y^5_7 + y^5_{10} + x^6_8 + k1_{14} + k2_{14_2} = 0 \\
&y^6_0 + y^6_{10} + [y^6_{13}] + [x^7_0] + k1_3 + k2_{3_3} = 0 \\
&y^6_0 + x^7_4 + k1_3 + k2_{3_3} = 0 \\
&y^6_0 + y^6_{10} + x^7_{12} + k1_3 + k2_{3_3} = 0 \\
&[y^6_1] + x^7_5 + k1_5 + k2_{5_3} = 0 \\
&[y^6_1] + y^6_{11} + x^7_{13} + k1_5 + k2_{5_3} = 0 \\
&y^6_2 + y^6_8 + y^6_{15} + x^7_2 + k1_7 + k2_{7_3} = 0 \\
&y^6_3 + y^6_9 + y^6_{12} + x^7_3 + k1_4 + k2_{4_3} = 0 \\
&y^6_4 + y^6_{11} + x^7_9 + k1_1 + k2_{1_3} = 0 \\
&y^6_6 + y^6_9 + x^7_{11} + k1_0 + k2_{0_3} = 0 \\
&y^6_7 + y^6_{10} + x^7_8 + k1_6 + k2_{6_3} = 0 \\
&[y^7_0] + y^7_{10} + y^7_{13} + x^8_0 + k1_{13} + k2_{13_3} = 0 \\
&[y^7_0] + x^8_4 + k1_{13} + k2_{13_3} = 0 \\
&[y^7_0] + y^7_{10} + x^8_{12} + k1_{13} + k2_{13_3} = 0 \\
&y^7_3 + y^7_9 + y^7_{12} + x^8_3 + k1_{10} + k2_{10_3} = 0 \\
&y^7_4 + y^7_{11} + x^8_9 + k1_{15} + k2_{15_3} = 0 \\
&y^7_5 + y^7_8 + x^8_{10} + k1_8 + k2_{8_3} = 0 \\
&y^8_0 + y^8_{10} + x^9_{12} + k1_5 + k2_{5_4} = 0 \\
&y^8_3 + y^8_9 + y^8_{12} + x^9_3 + k1_2 + k2_{2_4} = 0 \\
&y^8_4 + y^8_{11} + x^9_9 + k1_7 + k2_{7_4} = 0 \\
&y^9_3 + y^9_9 + y^9_{12} + x^{10}_3 + k1_8 + k2_{8_4} = 0 \\
&y^{10}_3 + y^{10}_9 + x^{11}_{15} + k1_0 + k2_{0_5} = 0 \\
&y^{14}_1 + [y^{14}_{11}] + x^{15}_{13} + k1_0 + k2_{0_7} = 0 \\
&y^{14}_2 + y^{14}_8 + y^{14}_{15} + x^{15}_2 + k1_4 + k2_{4_7} = 0 \\
&y^{14}_5 + y^{14}_8 + x^{15}_{10} + k1_3 + k2_{3_7} = 0 \\
&y^{14}_6 + y^{14}_9 + x^{15}_{11} + k1_5 + k2_{5_7} = 0 \\
&S(x^0_0) + y^0_0 = 0 \\
&S(x^0_1) + y^0_1 = 0 \\
&S(x^0_6) + y^0_6 = 0 \\
&S([x^0_7]) + [y^0_7] = 0 \\
&S(x^0_{10}) + y^0_{10} = 0 \\
&S(x^0_{12}) + y^0_{12} = 0 \\
&S(x^0_{13}) + y^0_{13} = 0 \\
&S(x^0_{14}) + y^0_{14} = 0 \\
&S(x^1_0) + y^1_0 = 0 \\
&S(x^1_3) + y^1_3 = 0 \\
&S(x^1_4) + y^1_4 = 0 \\
&S(x^1_7) + y^1_7 = 0 \\
&S(x^1_8) + y^1_8 = 0 \\
&S(x^1_9) + y^1_9 = 0 \\
&S(x^1_{11}) + y^1_{11} = 0
\end{aligned}$$

$$\begin{aligned}
&S(x^{1_{12}}) + y^{1_{12}} = 0 \\
&S([x^{1_{14}}]) + [y^{1_{14}}] = 0 \\
&S([x^{2_1}]) + [y^{2_1}] = 0 \\
&S([x^{2_3}]) + [y^{2_3}] = 0 \\
&S(x^{2_5}) + y^{2_5} = 0 \\
&S(x^{2_6}) + y^{2_6} = 0 \\
&S(x^{2_8}) + y^{2_8} = 0 \\
&S(x^{2_9}) + y^{2_9} = 0 \\
&S(x^{2_{12}}) + y^{2_{12}} = 0 \\
&S(x^{2_{13}}) + y^{2_{13}} = 0 \\
&S(x^{2_{14}}) + y^{2_{14}} = 0 \\
&S(x^{3_0}) + y^{3_0} = 0 \\
&S(x^{3_1}) + y^{3_1} = 0 \\
&S(x^{3_3}) + y^{3_3} = 0 \\
&S(x^{3_5}) + y^{3_5} = 0 \\
&S(x^{3_7}) + y^{3_7} = 0 \\
&S(x^{3_{10}}) + y^{3_{10}} = 0 \\
&S(x^{3_{11}}) + y^{3_{11}} = 0 \\
&S(x^{3_{12}}) + y^{3_{12}} = 0 \\
&S(x^{3_{13}}) + y^{3_{13}} = 0 \\
&S(x^{3_{15}}) + y^{3_{15}} = 0 \\
&S(x^{4_0}) + y^{4_0} = 0 \\
&S(x^{4_2}) + y^{4_2} = 0 \\
&S(x^{4_3}) + y^{4_3} = 0 \\
&S(x^{4_4}) + y^{4_4} = 0 \\
&S([x^{4_6}]) + [y^{4_6}] = 0 \\
&S(x^{4_7}) + y^{4_7} = 0 \\
&S(x^{4_8}) + y^{4_8} = 0 \\
&S([x^{4_{10}}]) + [y^{4_{10}}] = 0 \\
&S(x^{4_{12}}) + y^{4_{12}} = 0 \\
&S(x^{4_{13}}) + y^{4_{13}} = 0 \\
&S(x^{4_{15}}) + y^{4_{15}} = 0 \\
&S(x^{5_0}) + y^{5_0} = 0 \\
&S(x^{5_3}) + y^{5_3} = 0 \\
&S([x^{5_4}]) + [y^{5_4}] = 0 \\
&S(x^{5_5}) + y^{5_5} = 0 \\
&S(x^{5_8}) + y^{5_8} = 0 \\
&S(x^{5_9}) + y^{5_9} = 0 \\
&S([x^{5_{11}}]) + [y^{5_{11}}] = 0 \\
&S(x^{5_{12}}) + y^{5_{12}} = 0 \\
&S(x^{5_{13}}) + y^{5_{13}} = 0 \\
&S(x^{6_0}) + y^{6_0} = 0 \\
&S(x^{6_3}) + y^{6_3} = 0 \\
&S(x^{6_4}) + y^{6_4} = 0
\end{aligned}$$

$$\begin{aligned}
S(x^6_9) + y^6_9 &= 0 \\
S(x^6_{10}) + y^6_{10} &= 0 \\
S(x^6_{12}) + y^6_{12} &= 0 \\
S(x^7_3) + y^7_3 &= 0 \\
S(x^7_9) + y^7_9 &= 0 \\
S(x^7_{12}) + y^7_{12} &= 0 \\
S(x^8_3) + y^8_3 &= 0
\end{aligned}$$

the 5 Th Minimal constraint set is:

$$\begin{aligned}
y^0_0 + x^1_4 + k_{1_0} + k_{2_0_0} &= 0 \\
y^0_0 + y^0_{10} + x^1_{12} + k_{1_0} + k_{2_0_0} &= 0 \\
y^0_1 + x^1_5 + k_{1_1} + k_{2_1_0} &= 0 \\
y^0_1 + y^0_{11} + x^1_{13} + k_{1_1} + k_{2_1_0} &= 0 \\
y^0_2 + x^1_6 + k_{1_2} + k_{2_2_0} &= 0 \\
y^0_2 + [y^0_8] + [x^1_{14}] + k_{1_2} + k_{2_2_0} &= 0 \\
y^0_4 + y^0_{11} + x^1_9 + k_{1_4} + k_{2_4_0} &= 0 \\
y^0_5 + [y^0_8] + x^1_{10} + k_{1_5} + k_{2_5_0} &= 0 \\
y^1_0 + y^1_{10} + y^1_{13} + x^2_0 + k_{1_9} + k_{2_9_0} &= 0 \\
y^1_1 + y^1_{11} + [y^1_{14}] + [x^2_1] + k_{1_{15}} + k_{2_{15_0}} &= 0 \\
y^1_1 + x^2_5 + k_{1_{15}} + k_{2_{15_0}} &= 0 \\
y^1_2 + x^2_6 + k_{1_8} + k_{2_8_0} &= 0 \\
y^1_2 + y^1_8 + x^2_{14} + k_{1_8} + k_{2_8_0} &= 0 \\
y^1_3 + y^1_9 + y^1_{12} + [x^2_3] + k_{1_{13}} + k_{2_{13_0}} &= 0 \\
y^1_3 + [x^2_7] + k_{1_{13}} + k_{2_{13_0}} &= 0 \\
y^1_4 + y^1_{11} + x^2_9 + k_{1_{10}} + k_{2_{10_0}} &= 0 \\
y^1_5 + y^1_8 + x^2_{10} + k_{1_{14}} + k_{2_{14_0}} &= 0 \\
y^1_6 + y^1_9 + x^2_{11} + k_{1_{12}} + k_{2_{12_0}} &= 0 \\
y^2_0 + x^3_4 + k_{1_1} + k_{2_{1_1}} &= 0 \\
[y^2_1] + y^2_{11} + y^2_{14} + x^3_1 + k_{1_7} + k_{2_{7_1}} &= 0 \\
y^2_2 + y^2_8 + [y^2_{15}] + [x^3_2] + k_{1_0} + k_{2_{0_1}} &= 0 \\
y^2_2 + x^3_6 + k_{1_0} + k_{2_{0_1}} &= 0 \\
[y^2_3] + x^3_7 + k_{1_5} + k_{2_{5_1}} &= 0 \\
y^2_4 + y^2_{11} + x^3_9 + k_{1_2} + k_{2_{2_1}} &= 0 \\
y^2_5 + y^2_8 + x^3_{10} + k_{1_6} + k_{2_{6_1}} &= 0 \\
y^2_6 + y^2_9 + x^3_{11} + k_{1_4} + k_{2_{4_1}} &= 0 \\
[y^2_7] + y^2_{10} + [x^3_8] + k_{1_3} + k_{2_{3_1}} &= 0 \\
y^3_0 + y^3_{10} + y^3_{13} + x^4_0 + k_{1_{15}} + k_{2_{15_1}} &= 0 \\
y^3_0 + y^3_{10} + x^4_{12} + k_{1_{15}} + k_{2_{15_1}} &= 0 \\
[y^3_2] + [x^4_6] + k_{1_9} + k_{2_{9_1}} &= 0 \\
[y^3_2] + [y^3_8] + x^4_{14} + k_{1_9} + k_{2_{9_1}} &= 0 \\
y^3_4 + y^3_{11} + x^4_9 + k_{1_8} + k_{2_{8_1}} &= 0 \\
y^3_6 + y^3_9 + x^4_{11} + k_{1_{10}} + k_{2_{10_1}} &= 0 \\
y^3_7 + y^3_{10} + x^4_8 + k_{1_{13}} + k_{2_{13_1}} &= 0 \\
y^4_0 + [x^5_4] + k_{1_7} + k_{2_{7_2}} &= 0 \\
y^4_1 + y^4_{11} + y^4_{14} + x^5_1 + k_{1_3} + k_{2_{3_2}} &= 0
\end{aligned}$$

$$\begin{aligned}
&y^4_1 + x^5_5 + k1_3 + k2_3_2 = 0 \\
&y^4_2 + x^5_6 + k1_1 + k2_1_2 = 0 \\
&y^4_2 + y^4_8 + x^5_14 + k1_1 + k2_1_2 = 0 \\
&y^4_3 + y^4_9 + y^4_12 + x^5_3 + k1_6 + k2_6_2 = 0 \\
&y^4_3 + y^4_9 + x^5_15 + k1_6 + k2_6_2 = 0 \\
&[y^4_6] + y^4_9 + [x^5_11] + k1_2 + k2_2_2 = 0 \\
&y^5_1 + [y^5_11] + y^5_14 + [x^6_1] + k1_13 + k2_13_2 = 0 \\
&y^5_1 + x^6_5 + k1_13 + k2_13_2 = 0 \\
&y^5_1 + [y^5_11] + [x^6_13] + k1_13 + k2_13_2 = 0 \\
&y^5_2 + y^5_8 + y^5_15 + x^6_2 + k1_15 + k2_15_2 = 0 \\
&y^5_2 + x^6_6 + k1_15 + k2_15_2 = 0 \\
&y^5_3 + y^5_9 + x^6_15 + k1_12 + k2_12_2 = 0 \\
&[y^5_4] + [y^5_11] + x^6_9 + k1_9 + k2_9_2 = 0 \\
&y^5_5 + y^5_8 + x^6_10 + k1_10 + k2_10_2 = 0 \\
&y^5_6 + y^5_9 + x^6_11 + k1_8 + k2_8_2 = 0 \\
&y^6_0 + y^6_10 + [y^6_13] + [x^7_0] + k1_3 + k2_3_3 = 0 \\
&y^6_0 + x^7_4 + k1_3 + k2_3_3 = 0 \\
&[y^6_1] + y^6_11 + x^7_13 + k1_5 + k2_5_3 = 0 \\
&y^6_2 + y^6_8 + y^6_15 + x^7_2 + k1_7 + k2_7_3 = 0 \\
&y^6_5 + y^6_8 + x^7_10 + k1_2 + k2_2_3 = 0 \\
&y^6_6 + y^6_9 + x^7_11 + k1_0 + k2_0_3 = 0 \\
&[y^7_0] + y^7_10 + y^7_13 + x^8_0 + k1_13 + k2_13_3 = 0 \\
&y^7_2 + x^8_6 + k1_11 + k2_11_3 = 0 \\
&y^7_4 + y^7_11 + x^8_9 + k1_15 + k2_15_3 = 0 \\
&y^8_0 + x^9_4 + k1_5 + k2_5_4 = 0 \\
&y^8_6 + y^8_9 + x^9_11 + k1_1 + k2_1_4 = 0 \\
&y^9_4 + y^9_11 + x^{10}_9 + k1_11 + k2_11_4 = 0 \\
&y^{14}_1 + x^{15}_5 + k1_0 + k2_0_7 = 0 \\
&y^{14}_1 + [y^{14}_11] + x^{15}_13 + k1_0 + k2_0_7 = 0 \\
&y^{14}_2 + y^{14}_8 + y^{14}_15 + x^{15}_2 + k1_4 + k2_4_7 = 0 \\
&y^{14}_5 + y^{14}_8 + x^{15}_10 + k1_3 + k2_3_7 = 0 \\
&y^{14}_6 + y^{14}_9 + x^{15}_11 + k1_5 + k2_5_7 = 0 \\
&S(x^0_0) + y^0_0 = 0 \\
&S(x^0_1) + y^0_1 = 0 \\
&S(x^0_3) + y^0_3 = 0 \\
&S(x^0_5) + y^0_5 = 0 \\
&S(x^0_6) + y^0_6 = 0 \\
&S([x^0_7]) + [y^0_7] = 0 \\
&S(x^0_9) + y^0_9 = 0 \\
&S(x^0_{10}) + y^0_{10} = 0 \\
&S(x^0_{14}) + y^0_{14} = 0 \\
&S(x^1_4) + y^1_4 = 0 \\
&S(x^1_6) + y^1_6 = 0 \\
&S(x^1_7) + y^1_7 = 0
\end{aligned}$$

$$\begin{aligned}
S(x^{1_8}) + y^{1_8} &= 0 \\
S(x^{1_9}) + y^{1_9} &= 0 \\
S(x^{1_{10}}) + y^{1_{10}} &= 0 \\
S(x^{1_{11}}) + y^{1_{11}} &= 0 \\
S(x^{2_6}) + y^{2_6} &= 0 \\
S(x^{2_8}) + y^{2_8} &= 0 \\
S(x^{2_9}) + y^{2_9} &= 0 \\
S(x^{2_{11}}) + y^{2_{11}} &= 0 \\
S(x^{2_{12}}) + y^{2_{12}} &= 0 \\
S(x^{2_{14}}) + y^{2_{14}} &= 0 \\
S(x^{3_1}) + y^{3_1} &= 0 \\
S(x^{3_3}) + y^{3_3} &= 0 \\
S(x^{3_4}) + y^{3_4} &= 0 \\
S(x^{3_5}) + y^{3_5} &= 0 \\
S(x^{3_6}) + y^{3_6} &= 0 \\
S(x^{3_{11}}) + y^{3_{11}} &= 0 \\
S(x^{3_{14}}) + y^{3_{14}} &= 0 \\
S(x^{3_{15}}) + y^{3_{15}} &= 0 \\
S(x^{4_1}) + y^{4_1} &= 0 \\
S(x^{4_2}) + y^{4_2} &= 0 \\
S(x^{4_5}) + y^{4_5} &= 0 \\
S([x^{4_6}]) + [y^{4_6}] &= 0 \\
S(x^{4_9}) + y^{4_9} &= 0 \\
S([x^{4_{10}}]) + [y^{4_{10}}] &= 0 \\
S(x^{4_{11}}) + y^{4_{11}} &= 0 \\
S(x^{4_{13}}) + y^{4_{13}} &= 0 \\
S(x^{4_{15}}) + y^{4_{15}} &= 0 \\
S(x^{5_0}) + y^{5_0} &= 0 \\
S([x^{5_4}]) + [y^{5_4}] &= 0 \\
S(x^{5_{10}}) + y^{5_{10}} &= 0 \\
S([x^{5_{11}}]) + [y^{5_{11}}] &= 0 \\
S(x^{5_{13}}) + y^{5_{13}} &= 0 \\
S(x^{6_0}) + y^{6_0} &= 0 \\
S(x^{6_6}) + y^{6_6} &= 0 \\
S(x^{6_9}) + y^{6_9} &= 0 \\
S(x^{7_4}) + y^{7_4} &= 0 \\
S(x^{7_{11}}) + y^{7_{11}} &= 0
\end{aligned}$$

the 6 Th Minimal constraint set is:

$$\begin{aligned}
y^{0_0} + x^{1_4} + k1_0 + k2_0_0 &= 0 \\
y^{0_0} + y^{0_{10}} + x^{1_{12}} + k1_0 + k2_0_0 &= 0 \\
y^{0_1} + x^{1_5} + k1_1 + k2_1_0 &= 0 \\
y^{0_1} + y^{0_{11}} + x^{1_{13}} + k1_1 + k2_1_0 &= 0 \\
y^{0_4} + y^{0_{11}} + x^{1_9} + k1_4 + k2_4_0 &= 0 \\
y^{1_0} + y^{1_{10}} + y^{1_{13}} + x^{2_0} + k1_9 + k2_9_0 &= 0
\end{aligned}$$

$$\begin{aligned}
&y^{1_0} + y^{1_{10}} + x^{2_{12}} + k_{1_9} + k_{2_{9_0}} = 0 \\
&y^{1_1} + x^{2_5} + k_{1_{15}} + k_{2_{15_0}} = 0 \\
&y^{1_1} + y^{1_{11}} + x^{2_{13}} + k_{1_{15}} + k_{2_{15_0}} = 0 \\
&y^{1_2} + x^{2_6} + k_{1_8} + k_{2_{8_0}} = 0 \\
&y^{1_2} + y^{1_8} + x^{2_{14}} + k_{1_8} + k_{2_{8_0}} = 0 \\
&y^{1_4} + y^{1_{11}} + x^{2_9} + k_{1_{10}} + k_{2_{10_0}} = 0 \\
&y^{1_5} + y^{1_8} + x^{2_{10}} + k_{1_{14}} + k_{2_{14_0}} = 0 \\
&y^{2_0} + y^{2_{10}} + y^{2_{13}} + x^{3_0} + k_{1_1} + k_{2_{1_1}} = 0 \\
&[y^{2_1}] + y^{2_{11}} + y^{2_{14}} + x^{3_1} + k_{1_7} + k_{2_{7_1}} = 0 \\
&[y^{2_1}] + y^{2_{11}} + x^{3_{13}} + k_{1_7} + k_{2_{7_1}} = 0 \\
&y^{2_2} + x^{3_6} + k_{1_0} + k_{2_{0_1}} = 0 \\
&y^{2_2} + y^{2_8} + x^{3_{14}} + k_{1_0} + k_{2_{0_1}} = 0 \\
&[y^{2_3}] + y^{2_9} + y^{2_{12}} + x^{3_3} + k_{1_5} + k_{2_{5_1}} = 0 \\
&[y^{2_3}] + y^{2_9} + x^{3_{15}} + k_{1_5} + k_{2_{5_1}} = 0 \\
&y^{2_5} + y^{2_8} + x^{3_{10}} + k_{1_6} + k_{2_{6_1}} = 0 \\
&y^{2_6} + y^{2_9} + x^{3_{11}} + k_{1_4} + k_{2_{4_1}} = 0 \\
&y^{3_0} + y^{3_{10}} + x^{4_{12}} + k_{1_{15}} + k_{2_{15_1}} = 0 \\
&y^{3_1} + y^{3_{11}} + y^{3_{14}} + x^{4_1} + k_{1_{11}} + k_{2_{11_1}} = 0 \\
&[y^{3_2}] + [y^{3_8}] + y^{3_{15}} + x^{4_2} + k_{1_9} + k_{2_{9_1}} = 0 \\
&[y^{3_2}] + [y^{3_8}] + x^{4_{14}} + k_{1_9} + k_{2_{9_1}} = 0 \\
&y^{3_3} + y^{3_9} + x^{4_{15}} + k_{1_{14}} + k_{2_{14_1}} = 0 \\
&y^{3_6} + y^{3_9} + x^{4_{11}} + k_{1_{10}} + k_{2_{10_1}} = 0 \\
&y^{4_0} + [x^{5_4}] + k_{1_7} + k_{2_{7_2}} = 0 \\
&y^{4_1} + y^{4_{11}} + y^{4_{14}} + x^{5_1} + k_{1_3} + k_{2_{3_2}} = 0 \\
&y^{4_2} + y^{4_8} + y^{4_{15}} + x^{5_2} + k_{1_1} + k_{2_{1_2}} = 0 \\
&y^{4_2} + x^{5_6} + k_{1_1} + k_{2_{1_2}} = 0 \\
&y^{4_2} + y^{4_8} + x^{5_{14}} + k_{1_1} + k_{2_{1_2}} = 0 \\
&y^{4_3} + y^{4_9} + y^{4_{12}} + x^{5_3} + k_{1_6} + k_{2_{6_2}} = 0 \\
&y^{4_3} + y^{4_9} + x^{5_{15}} + k_{1_6} + k_{2_{6_2}} = 0 \\
&y^{5_1} + [y^{5_{11}}] + y^{5_{14}} + [x^{6_1}] + k_{1_{13}} + k_{2_{13_2}} = 0 \\
&y^{5_2} + y^{5_8} + y^{5_{15}} + x^{6_2} + k_{1_{15}} + k_{2_{15_2}} = 0 \\
&y^{5_2} + x^{6_6} + k_{1_{15}} + k_{2_{15_2}} = 0 \\
&y^{5_2} + y^{5_8} + x^{6_{14}} + k_{1_{15}} + k_{2_{15_2}} = 0 \\
&y^{5_3} + y^{5_9} + x^{6_{15}} + k_{1_{12}} + k_{2_{12_2}} = 0 \\
&[y^{5_4}] + [y^{5_{11}}] + x^{6_9} + k_{1_9} + k_{2_{9_2}} = 0 \\
&y^{5_6} + y^{5_9} + x^{6_{11}} + k_{1_8} + k_{2_{8_2}} = 0 \\
&[y^{6_1}] + y^{6_{11}} + y^{6_{14}} + x^{7_1} + k_{1_5} + k_{2_{5_3}} = 0 \\
&y^{6_2} + y^{6_8} + y^{6_{15}} + x^{7_2} + k_{1_7} + k_{2_{7_3}} = 0 \\
&y^{6_2} + x^{7_6} + k_{1_7} + k_{2_{7_3}} = 0 \\
&y^{6_2} + y^{6_8} + x^{7_{14}} + k_{1_7} + k_{2_{7_3}} = 0 \\
&y^{6_6} + y^{6_9} + x^{7_{11}} + k_{1_0} + k_{2_{0_3}} = 0 \\
&y^{7_1} + y^{7_{11}} + y^{7_{14}} + x^{8_1} + k_{1_{14}} + k_{2_{14_3}} = 0 \\
&y^{14_1} + x^{15_5} + k_{1_0} + k_{2_{0_7}} = 0 \\
&y^{14_1} + [y^{14_{11}}] + x^{15_{13}} + k_{1_0} + k_{2_{0_7}} = 0
\end{aligned}$$

$$y^{14}_5 + y^{14}_8 + x^{15}_{10} + k_{1_3} + k_{2_3_7} = 0$$

$$S(x^0_0) + y^0_0 = 0$$

$$S(x^0_5) + y^0_5 = 0$$

$$S(x^0_6) + y^0_6 = 0$$

$$S(x^0_9) + y^0_9 = 0$$

$$S(x^0_{10}) + y^0_{10} = 0$$

$$S(x^0_{12}) + y^0_{12} = 0$$

$$S(x^0_{13}) + y^0_{13} = 0$$

$$S(x^0_{14}) + y^0_{14} = 0$$

$$S(x^1_0) + y^1_0 = 0$$

$$S(x^1_3) + y^1_3 = 0$$

$$S(x^1_6) + y^1_6 = 0$$

$$S(x^1_{10}) + y^1_{10} = 0$$

$$S(x^1_{11}) + y^1_{11} = 0$$

$$S([x^1_{14}]) + [y^1_{14}] = 0$$

$$S(x^1_{15}) + y^1_{15} = 0$$

$$S([x^2_1]) + [y^2_1] = 0$$

$$S(x^2_2) + y^2_2 = 0$$

$$S(x^2_{11}) + y^2_{11} = 0$$

$$S(x^2_{12}) + y^2_{12} = 0$$

$$S(x^2_{14}) + y^2_{14} = 0$$

$$S([x^2_{15}]) + [y^2_{15}] = 0$$

$$S(x^3_1) + y^3_1 = 0$$

$$S([x^3_2]) + [y^3_2] = 0$$

$$S(x^3_3) + y^3_3 = 0$$

$$S(x^3_4) + y^3_4 = 0$$

$$S(x^3_6) + y^3_6 = 0$$

$$S(x^3_{14}) + y^3_{14} = 0$$

$$S(x^3_{15}) + y^3_{15} = 0$$

$$S(x^4_1) + y^4_1 = 0$$

$$S(x^4_2) + y^4_2 = 0$$

$$S([x^4_6]) + [y^4_6] = 0$$

$$S(x^4_9) + y^4_9 = 0$$

$$S(x^4_{11}) + y^4_{11} = 0$$

$$S(x^4_{14}) + y^4_{14} = 0$$

$$S(x^4_{15}) + y^4_{15} = 0$$

$$S(x^5_1) + y^5_1 = 0$$

$$S([x^5_{11}]) + [y^5_{11}] = 0$$

the 7 Th Minimal constraint set is:

$$y^1_0 + x^2_4 + k_{1_9} + k_{2_9_0} = 0$$

the 8 Th Minimal constraint set is:

$$y^8_1 + x^9_5 + k_{1_6} + k_{2_6_4} = 0$$