**Minimal Constraint Subsets Detected for differential trail in Table 10 DDH21+**

the 0 th Minimal Constraint set is:

y^1\_1 + x^2\_5 + k\_15= 0

y^1\_1 + y^1\_11 + x^2\_13 + k\_15= 0

y^1\_3 + y^1\_9 + [y^1\_12] + [x^2\_3] + k\_13= 0

y^1\_3 + y^1\_9 + x^2\_15 + k\_13= 0

[y^1\_4] + y^1\_11 + [x^2\_9] + k\_10= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k\_1= 0

y^2\_0 + y^2\_10 + x^3\_12 + k\_1= 0

y^2\_2 + [y^2\_8] + y^2\_15 + [x^3\_2] + k\_0= 0

y^2\_2 + x^3\_6 + k\_0= 0

y^2\_5 + [y^2\_8] + [x^3\_10] + k\_6= 0

y^3\_0 + [y^3\_10] + [x^4\_12] + k\_15= 0

y^3\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k\_14= 0

y^3\_3 + x^4\_7 + k\_14= 0

y^3\_6 + y^3\_9 + x^4\_11 + k\_10= 0

[y^4\_0] + y^4\_10 + [y^4\_13] + x^5\_0 + k\_7= 0

y^4\_1 + x^5\_5 + k\_3= 0

y^4\_1 + y^4\_11 + x^5\_13 + k\_3= 0

y^4\_3 + x^5\_7 + k\_6= 0

y^4\_7 + y^4\_10 + x^5\_8 + k\_5= 0

y^5\_0 + y^5\_10 + y^5\_13 + x^6\_0 + k\_11= 0

[y^5\_2] + y^5\_8 + [y^5\_15] + x^6\_2 + k\_15= 0

[y^5\_2] + y^5\_8 + [x^6\_14] + k\_15= 0

y^5\_3 + y^5\_9 + [y^5\_12] + [x^6\_3] + k\_12= 0

y^5\_3 + y^5\_9 + x^6\_15 + k\_12= 0

y^5\_5 + y^5\_8 + x^6\_10 + k\_10= 0

y^5\_7 + y^5\_10 + x^6\_8 + k\_14= 0

y^6\_0 + y^6\_10 + x^7\_12 + k\_3= 0

y^6\_2 + y^6\_8 + y^6\_15 + x^7\_2 + k\_7= 0

[y^6\_3] + [y^6\_9] + x^7\_15 + k\_4= 0

y^7\_0 + [y^7\_10] + [y^7\_13] + x^8\_0 + k\_13= 0

y^7\_0 + x^8\_4 + k\_13= 0

y^7\_2 + y^7\_8 + y^7\_15 + x^8\_2 + k\_11= 0

y^7\_2 + x^8\_6 + k\_11= 0

y^7\_2 + y^7\_8 + x^8\_14 + k\_11= 0

y^7\_3 + y^7\_9 + y^7\_12 + x^8\_3 + k\_10= 0

y^7\_3 + y^7\_9 + x^8\_15 + k\_10= 0

[y^7\_7] + [y^7\_10] + x^8\_8 + k\_12= 0

y^8\_0 + x^9\_4 + k\_5= 0

y^8\_1 + y^8\_11 + y^8\_14 + x^9\_1 + k\_6= 0

y^8\_1 + x^9\_5 + k\_6= 0

y^8\_2 + y^8\_8 + y^8\_15 + x^9\_2 + k\_3= 0

y^8\_3 + y^8\_9 + x^9\_15 + k\_2= 0

y^8\_4 + y^8\_11 + x^9\_9 + k\_7= 0

y^8\_6 + y^8\_9 + x^9\_11 + k\_1= 0

y^9\_1 + x^10\_5 + k\_12= 0

y^9\_2 + y^9\_8 + y^9\_15 + x^10\_2 + k\_13= 0

[y^9\_3] + x^10\_7 + k\_8= 0

[y^9\_3] + y^9\_9 + x^10\_15 + k\_8= 0

y^9\_4 + y^9\_11 + x^10\_9 + k\_11= 0

y^9\_5 + y^9\_8 + x^10\_10 + k\_9= 0

y^10\_2 + y^10\_8 + y^10\_15 + x^11\_2 + k\_5= 0

y^10\_3 + x^11\_7 + k\_0= 0

y^10\_3 + y^10\_9 + x^11\_15 + k\_0= 0

y^10\_5 + y^10\_8 + x^11\_10 + k\_1= 0

y^10\_7 + y^10\_10 + x^11\_8 + k\_2= 0

y^11\_2 + y^11\_8 + y^11\_15 + x^12\_2 + k\_14= 0

y^11\_7 + y^11\_10 + [x^12\_8] + k\_8= 0

y^12\_2 + [y^12\_8] + [x^13\_14] + k\_6= 0

S(x^2\_5) + y^2\_5= 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\_6) + y^3\_6= 0

S(x^3\_12) + y^3\_12= 0

S(x^4\_3) + y^4\_3= 0

S(x^4\_7) + y^4\_7= 0

S(x^4\_11) + y^4\_11= 0

S(x^5\_0) + y^5\_0= 0

S(x^5\_5) + y^5\_5= 0

S(x^5\_7) + y^5\_7= 0

S(x^5\_8) + y^5\_8= 0

S(x^5\_13) + y^5\_13= 0

S(x^6\_0) + y^6\_0= 0

S(x^6\_2) + y^6\_2= 0

S(x^6\_8) + y^6\_8= 0

S(x^6\_10) + y^6\_10= 0

S(x^6\_15) + y^6\_15= 0

S(x^7\_2) + y^7\_2= 0

S(x^7\_12) + y^7\_12= 0

S(x^7\_15) + y^7\_15= 0

S(x^8\_0) + y^8\_0= 0

S(x^8\_2) + y^8\_2= 0

S(x^8\_3) + y^8\_3= 0

S(x^8\_4) + y^8\_4= 0

S(x^8\_6) + y^8\_6= 0

S(x^8\_8) + y^8\_8= 0

S(x^8\_14) + y^8\_14= 0

S(x^8\_15) + y^8\_15= 0

S(x^9\_1) + y^9\_1= 0

S(x^9\_2) + y^9\_2= 0

S(x^9\_4) + y^9\_4= 0

S(x^9\_5) + y^9\_5= 0

S(x^9\_9) + y^9\_9= 0

S(x^9\_11) + y^9\_11= 0

S(x^9\_15) + y^9\_15= 0

S(x^10\_2) + y^10\_2= 0

S(x^10\_5) + y^10\_5= 0

S(x^10\_7) + y^10\_7= 0

S(x^10\_9) + y^10\_9= 0

S(x^10\_10) + y^10\_10= 0

S(x^10\_15) + y^10\_15= 0

S(x^11\_2) + y^11\_2= 0

S(x^11\_7) + y^11\_7= 0

S(x^11\_8) + y^11\_8= 0

S(x^11\_10) + y^11\_10= 0

S(x^11\_15) + y^11\_15= 0

S(x^12\_2) + y^12\_2= 0

the 1 th Minimal Constraint set is:

y^1\_1 + x^2\_5 + k\_15= 0

y^1\_1 + y^1\_11 + x^2\_13 + k\_15= 0

[y^1\_4] + y^1\_11 + [x^2\_9] + k\_10= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k\_1= 0

y^2\_0 + y^2\_10 + x^3\_12 + k\_1= 0

y^2\_5 + [y^2\_8] + [x^3\_10] + k\_6= 0

y^3\_0 + [y^3\_10] + [x^4\_12] + k\_15= 0

y^3\_1 + [y^3\_11] + [y^3\_14] + x^4\_1 + k\_11= 0

y^3\_1 + x^4\_5 + k\_11= 0

y^3\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k\_14= 0

y^3\_3 + y^3\_9 + x^4\_15 + k\_14= 0

y^4\_1 + x^5\_5 + k\_3= 0

[y^4\_2] + y^4\_8 + y^4\_15 + [x^5\_2] + k\_1= 0

y^4\_3 + [y^4\_9] + [x^5\_15] + k\_6= 0

y^4\_5 + y^4\_8 + x^5\_10 + k\_4= 0

y^5\_0 + x^6\_4 + k\_11= 0

y^5\_0 + y^5\_10 + x^6\_12 + k\_11= 0

[y^5\_2] + y^5\_8 + [x^6\_14] + k\_15= 0

y^5\_3 + y^5\_9 + [y^5\_12] + [x^6\_3] + k\_12= 0

y^5\_3 + y^5\_9 + x^6\_15 + k\_12= 0

y^5\_5 + y^5\_8 + x^6\_10 + k\_10= 0

y^6\_0 + x^7\_4 + k\_3= 0

y^6\_0 + y^6\_10 + x^7\_12 + k\_3= 0

[y^6\_1] + y^6\_11 + [y^6\_14] + x^7\_1 + k\_5= 0

y^6\_2 + y^6\_8 + y^6\_15 + x^7\_2 + k\_7= 0

y^6\_2 + y^6\_8 + x^7\_14 + k\_7= 0

[y^6\_3] + [y^6\_9] + y^6\_12 + x^7\_3 + k\_4= 0

[y^6\_3] + [y^6\_9] + x^7\_15 + k\_4= 0

y^6\_4 + y^6\_11 + x^7\_9 + k\_1= 0

y^7\_0 + [y^7\_10] + [y^7\_13] + x^8\_0 + k\_13= 0

y^7\_0 + x^8\_4 + k\_13= 0

y^7\_1 + y^7\_11 + y^7\_14 + x^8\_1 + k\_14= 0

y^7\_2 + y^7\_8 + y^7\_15 + x^8\_2 + k\_11= 0

y^7\_2 + x^8\_6 + k\_11= 0

y^7\_2 + y^7\_8 + x^8\_14 + k\_11= 0

y^7\_3 + y^7\_9 + y^7\_12 + x^8\_3 + k\_10= 0

y^7\_4 + y^7\_11 + x^8\_9 + k\_15= 0

y^8\_0 + x^9\_4 + k\_5= 0

y^8\_1 + y^8\_11 + y^8\_14 + x^9\_1 + k\_6= 0

y^8\_2 + x^9\_6 + k\_3= 0

y^8\_3 + x^9\_7 + k\_2= 0

y^8\_4 + y^8\_11 + x^9\_9 + k\_7= 0

y^8\_6 + y^8\_9 + x^9\_11 + k\_1= 0

y^9\_0 + x^10\_4 + k\_14= 0

y^9\_0 + y^9\_10 + x^10\_12 + k\_14= 0

y^9\_1 + x^10\_5 + k\_12= 0

y^9\_4 + y^9\_11 + x^10\_9 + k\_11= 0

y^9\_6 + y^9\_9 + x^10\_11 + k\_15= 0

y^9\_7 + y^9\_10 + x^10\_8 + k\_10= 0

y^10\_3 + y^10\_9 + y^10\_12 + x^11\_3 + k\_0= 0

y^10\_3 + x^11\_7 + k\_0= 0

y^10\_4 + y^10\_11 + x^11\_9 + k\_3= 0

y^10\_5 + y^10\_8 + x^11\_10 + k\_1= 0

y^11\_3 + y^11\_9 + x^12\_15 + k\_9= 0

y^11\_7 + y^11\_10 + [x^12\_8] + k\_8= 0

y^12\_2 + [y^12\_8] + y^12\_15 + [x^13\_2] + k\_6= 0

y^12\_2 + [y^12\_8] + [x^13\_14] + k\_6= 0

S(x^2\_5) + y^2\_5= 0

S(x^2\_13) + y^2\_13= 0

S(x^3\_0) + y^3\_0= 0

S(x^3\_12) + y^3\_12= 0

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

S(x^4\_3) + y^4\_3= 0

S(x^4\_5) + y^4\_5= 0

S(x^4\_15) + y^4\_15= 0

S(x^5\_5) + y^5\_5= 0

S(x^5\_10) + y^5\_10= 0

S(x^6\_4) + y^6\_4= 0

S(x^6\_10) + y^6\_10= 0

S(x^6\_12) + y^6\_12= 0

S(x^6\_15) + y^6\_15= 0

S(x^7\_1) + y^7\_1= 0

S(x^7\_2) + y^7\_2= 0

S(x^7\_3) + y^7\_3= 0

S(x^7\_4) + y^7\_4= 0

S(x^7\_9) + y^7\_9= 0

S(x^7\_12) + y^7\_12= 0

S(x^7\_14) + y^7\_14= 0

S(x^7\_15) + y^7\_15= 0

S(x^8\_0) + y^8\_0= 0

S(x^8\_1) + y^8\_1= 0

S(x^8\_2) + y^8\_2= 0

S(x^8\_3) + y^8\_3= 0

S(x^8\_4) + y^8\_4= 0

S(x^8\_6) + y^8\_6= 0

S(x^8\_9) + y^8\_9= 0

S(x^8\_14) + y^8\_14= 0

S(x^9\_1) + y^9\_1= 0

S(x^9\_4) + y^9\_4= 0

S(x^9\_6) + y^9\_6= 0

S(x^9\_7) + y^9\_7= 0

S(x^9\_9) + y^9\_9= 0

S(x^9\_11) + y^9\_11= 0

S(x^10\_4) + y^10\_4= 0

S(x^10\_5) + y^10\_5= 0

S(x^10\_8) + y^10\_8= 0

S(x^10\_9) + y^10\_9= 0

S(x^10\_11) + y^10\_11= 0

S(x^10\_12) + y^10\_12= 0

S(x^11\_3) + y^11\_3= 0

S(x^11\_7) + y^11\_7= 0

S(x^11\_9) + y^11\_9= 0

S(x^11\_10) + y^11\_10= 0

S(x^12\_15) + y^12\_15= 0

the 2 th Minimal Constraint set is:

[y^0\_0] + y^0\_10 + [y^0\_13] + x^1\_0 + k\_0= 0

[y^0\_0] + y^0\_10 + [x^1\_12] + k\_0= 0

y^1\_0 + y^1\_10 + x^2\_12 + k\_9= 0

y^1\_1 + x^2\_5 + k\_15= 0

y^1\_1 + y^1\_11 + x^2\_13 + k\_15= 0

y^1\_3 + y^1\_9 + [y^1\_12] + [x^2\_3] + k\_13= 0

y^1\_3 + y^1\_9 + x^2\_15 + k\_13= 0

[y^1\_4] + y^1\_11 + [x^2\_9] + k\_10= 0

[y^1\_7] + y^1\_10 + [x^2\_8] + k\_11= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k\_1= 0

y^2\_0 + y^2\_10 + x^3\_12 + k\_1= 0

y^2\_2 + [y^2\_8] + y^2\_15 + [x^3\_2] + k\_0= 0

y^2\_2 + x^3\_6 + k\_0= 0

[y^2\_3] + [y^2\_9] + y^2\_12 + x^3\_3 + k\_5= 0

y^2\_5 + [y^2\_8] + [x^3\_10] + k\_6= 0

y^3\_0 + [y^3\_10] + [x^4\_12] + k\_15= 0

y^3\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k\_14= 0

y^3\_6 + y^3\_9 + x^4\_11 + k\_10= 0

y^4\_1 + x^5\_5 + k\_3= 0

y^4\_1 + y^4\_11 + x^5\_13 + k\_3= 0

y^4\_3 + [y^4\_9] + [x^5\_15] + k\_6= 0

y^5\_0 + y^5\_10 + y^5\_13 + x^6\_0 + k\_11= 0

y^5\_0 + y^5\_10 + x^6\_12 + k\_11= 0

[y^5\_1] + [y^5\_11] + x^6\_13 + k\_13= 0

[y^5\_2] + y^5\_8 + [x^6\_14] + k\_15= 0

y^5\_3 + y^5\_9 + [y^5\_12] + [x^6\_3] + k\_12= 0

y^5\_3 + x^6\_7 + k\_12= 0

y^5\_5 + y^5\_8 + x^6\_10 + k\_10= 0

[y^5\_6] + y^5\_9 + x^6\_11 + k\_8= 0

y^6\_0 + y^6\_10 + y^6\_13 + x^7\_0 + k\_3= 0

y^6\_0 + x^7\_4 + k\_3= 0

y^6\_0 + y^6\_10 + x^7\_12 + k\_3= 0

[y^6\_1] + y^6\_11 + [y^6\_14] + x^7\_1 + k\_5= 0

[y^6\_3] + [y^6\_9] + y^6\_12 + x^7\_3 + k\_4= 0

[y^6\_3] + [y^6\_9] + x^7\_15 + k\_4= 0

[y^6\_6] + [y^6\_9] + x^7\_11 + k\_0= 0

y^6\_7 + y^6\_10 + x^7\_8 + k\_6= 0

y^7\_0 + [y^7\_10] + [y^7\_13] + x^8\_0 + k\_13= 0

y^7\_1 + x^8\_5 + k\_14= 0

y^7\_2 + y^7\_8 + y^7\_15 + x^8\_2 + k\_11= 0

y^7\_2 + x^8\_6 + k\_11= 0

y^7\_3 + y^7\_9 + y^7\_12 + x^8\_3 + k\_10= 0

y^7\_3 + x^8\_7 + k\_10= 0

y^7\_3 + y^7\_9 + x^8\_15 + k\_10= 0

y^7\_4 + y^7\_11 + x^8\_9 + k\_15= 0

[y^7\_7] + [y^7\_10] + x^8\_8 + k\_12= 0

y^8\_0 + y^8\_10 + x^9\_12 + k\_5= 0

y^8\_2 + y^8\_8 + y^8\_15 + x^9\_2 + k\_3= 0

y^8\_2 + x^9\_6 + k\_3= 0

y^8\_2 + y^8\_8 + x^9\_14 + k\_3= 0

y^8\_3 + x^9\_7 + k\_2= 0

y^8\_5 + y^8\_8 + x^9\_10 + k\_0= 0

y^8\_6 + y^8\_9 + x^9\_11 + k\_1= 0

y^8\_7 + y^8\_10 + x^9\_8 + k\_4= 0

y^9\_1 + y^9\_11 + y^9\_14 + x^10\_1 + k\_12= 0

y^9\_1 + x^10\_5 + k\_12= 0

y^9\_2 + y^9\_8 + x^10\_14 + k\_13= 0

[y^9\_3] + y^9\_9 + y^9\_12 + x^10\_3 + k\_8= 0

y^9\_6 + y^9\_9 + x^10\_11 + k\_15= 0

y^9\_7 + y^9\_10 + x^10\_8 + k\_10= 0

y^10\_1 + y^10\_11 + y^10\_14 + x^11\_1 + k\_4= 0

y^10\_3 + x^11\_7 + k\_0= 0

y^10\_5 + y^10\_8 + x^11\_10 + k\_1= 0

y^11\_1 + x^12\_5 + k\_10= 0

y^11\_7 + y^11\_10 + [x^12\_8] + k\_8= 0

y^12\_5 + [y^12\_8] + [x^13\_10] + k\_7= 0

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

S(x^2\_5) + y^2\_5= 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\_3) + y^3\_3= 0

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

S(x^3\_12) + y^3\_12= 0

S(x^4\_3) + y^4\_3= 0

S(x^4\_11) + y^4\_11= 0

S(x^5\_5) + y^5\_5= 0

S(x^5\_13) + y^5\_13= 0

S(x^6\_0) + y^6\_0= 0

S(x^6\_7) + y^6\_7= 0

S(x^6\_10) + y^6\_10= 0

S(x^6\_11) + y^6\_11= 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\_1) + y^7\_1= 0

S(x^7\_3) + y^7\_3= 0

S(x^7\_4) + y^7\_4= 0

S(x^7\_8) + y^7\_8= 0

S(x^7\_11) + y^7\_11= 0

S(x^7\_12) + y^7\_12= 0

S(x^7\_15) + y^7\_15= 0

S(x^8\_0) + y^8\_0= 0

S(x^8\_2) + y^8\_2= 0

S(x^8\_3) + y^8\_3= 0

S(x^8\_5) + y^8\_5= 0

S(x^8\_6) + y^8\_6= 0

S(x^8\_7) + y^8\_7= 0

S(x^8\_8) + y^8\_8= 0

S(x^8\_9) + y^8\_9= 0

S(x^8\_15) + y^8\_15= 0

S(x^9\_2) + y^9\_2= 0

S(x^9\_6) + y^9\_6= 0

S(x^9\_7) + y^9\_7= 0

S(x^9\_8) + y^9\_8= 0

S(x^9\_10) + y^9\_10= 0

S(x^9\_11) + y^9\_11= 0

S(x^9\_12) + y^9\_12= 0

S(x^9\_14) + y^9\_14= 0

S(x^10\_1) + y^10\_1= 0

S(x^10\_3) + y^10\_3= 0

S(x^10\_5) + y^10\_5= 0

S(x^10\_8) + y^10\_8= 0

S(x^10\_11) + y^10\_11= 0

S(x^10\_14) + y^10\_14= 0

S(x^11\_1) + y^11\_1= 0

S(x^11\_7) + y^11\_7= 0

S(x^11\_10) + y^11\_10= 0

S(x^12\_5) + y^12\_5= 0

the 3 th Minimal Constraint set is:

y^1\_1 + x^2\_5 + k\_15= 0

y^1\_1 + y^1\_11 + x^2\_13 + k\_15= 0

y^1\_3 + y^1\_9 + [y^1\_12] + [x^2\_3] + k\_13= 0

y^1\_3 + y^1\_9 + x^2\_15 + k\_13= 0

[y^1\_4] + y^1\_11 + [x^2\_9] + k\_10= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k\_1= 0

y^2\_0 + y^2\_10 + x^3\_12 + k\_1= 0

y^2\_2 + [y^2\_8] + y^2\_15 + [x^3\_2] + k\_0= 0

y^2\_2 + x^3\_6 + k\_0= 0

y^2\_5 + [y^2\_8] + [x^3\_10] + k\_6= 0

y^3\_0 + [y^3\_10] + [x^4\_12] + k\_15= 0

y^3\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k\_14= 0

y^3\_3 + x^4\_7 + k\_14= 0

y^3\_6 + y^3\_9 + x^4\_11 + k\_10= 0

[y^4\_0] + y^4\_10 + [y^4\_13] + x^5\_0 + k\_7= 0

y^4\_1 + x^5\_5 + k\_3= 0

y^4\_1 + y^4\_11 + x^5\_13 + k\_3= 0

y^4\_3 + [y^4\_9] + [y^4\_12] + x^5\_3 + k\_6= 0

y^4\_7 + y^4\_10 + x^5\_8 + k\_5= 0

y^5\_0 + y^5\_10 + y^5\_13 + x^6\_0 + k\_11= 0

y^5\_0 + x^6\_4 + k\_11= 0

y^5\_0 + y^5\_10 + x^6\_12 + k\_11= 0

y^5\_3 + y^5\_9 + x^6\_15 + k\_12= 0

y^5\_5 + y^5\_8 + x^6\_10 + k\_10= 0

[y^5\_6] + y^5\_9 + x^6\_11 + k\_8= 0

y^6\_0 + y^6\_10 + x^7\_12 + k\_3= 0

y^6\_2 + y^6\_8 + y^6\_15 + x^7\_2 + k\_7= 0

y^6\_2 + y^6\_8 + x^7\_14 + k\_7= 0

[y^6\_3] + [y^6\_9] + y^6\_12 + x^7\_3 + k\_4= 0

y^6\_4 + y^6\_11 + x^7\_9 + k\_1= 0

[y^6\_6] + [y^6\_9] + x^7\_11 + k\_0= 0

y^7\_0 + [y^7\_10] + [y^7\_13] + x^8\_0 + k\_13= 0

y^7\_0 + x^8\_4 + k\_13= 0

y^7\_1 + y^7\_11 + y^7\_14 + x^8\_1 + k\_14= 0

y^7\_1 + x^8\_5 + k\_14= 0

y^7\_2 + y^7\_8 + x^8\_14 + k\_11= 0

y^7\_3 + y^7\_9 + y^7\_12 + x^8\_3 + k\_10= 0

[y^7\_5] + y^7\_8 + x^8\_10 + k\_8= 0

[y^7\_7] + [y^7\_10] + x^8\_8 + k\_12= 0

y^8\_0 + y^8\_10 + x^9\_12 + k\_5= 0

y^8\_1 + y^8\_11 + y^8\_14 + x^9\_1 + k\_6= 0

y^8\_3 + x^9\_7 + k\_2= 0

y^8\_4 + y^8\_11 + x^9\_9 + k\_7= 0

y^8\_5 + y^8\_8 + x^9\_10 + k\_0= 0

y^9\_1 + x^10\_5 + k\_12= 0

[y^9\_3] + y^9\_9 + y^9\_12 + x^10\_3 + k\_8= 0

y^9\_7 + y^9\_10 + x^10\_8 + k\_10= 0

y^10\_3 + x^11\_7 + k\_0= 0

y^10\_5 + y^10\_8 + x^11\_10 + k\_1= 0

y^11\_7 + y^11\_10 + [x^12\_8] + k\_8= 0

S(x^2\_5) + y^2\_5= 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\_6) + y^3\_6= 0

S(x^3\_12) + y^3\_12= 0

S(x^4\_3) + y^4\_3= 0

S(x^4\_7) + y^4\_7= 0

S(x^4\_11) + y^4\_11= 0

S(x^5\_0) + y^5\_0= 0

S(x^5\_3) + y^5\_3= 0

S(x^5\_5) + y^5\_5= 0

S(x^5\_8) + y^5\_8= 0

S(x^5\_13) + y^5\_13= 0

S(x^6\_0) + y^6\_0= 0

S(x^6\_4) + y^6\_4= 0

S(x^6\_10) + y^6\_10= 0

S(x^6\_11) + y^6\_11= 0

S(x^6\_12) + y^6\_12= 0

S(x^6\_15) + y^6\_15= 0

S(x^7\_2) + y^7\_2= 0

S(x^7\_3) + y^7\_3= 0

S(x^7\_9) + y^7\_9= 0

S(x^7\_11) + y^7\_11= 0

S(x^7\_12) + y^7\_12= 0

S(x^7\_14) + y^7\_14= 0

S(x^8\_0) + y^8\_0= 0

S(x^8\_1) + y^8\_1= 0

S(x^8\_3) + y^8\_3= 0

S(x^8\_4) + y^8\_4= 0

S(x^8\_5) + y^8\_5= 0

S(x^8\_8) + y^8\_8= 0

S(x^8\_10) + y^8\_10= 0

S(x^8\_14) + y^8\_14= 0

S(x^9\_1) + y^9\_1= 0

S(x^9\_7) + y^9\_7= 0

S(x^9\_9) + y^9\_9= 0

S(x^9\_10) + y^9\_10= 0

S(x^9\_12) + y^9\_12= 0

S(x^10\_3) + y^10\_3= 0

S(x^10\_5) + y^10\_5= 0

S(x^10\_8) + y^10\_8= 0

S(x^11\_7) + y^11\_7= 0

S(x^11\_10) + y^11\_10= 0

the 4 th Minimal Constraint set is:

y^1\_1 + x^2\_5 + k\_15= 0

y^1\_1 + y^1\_11 + x^2\_13 + k\_15= 0

[y^1\_4] + y^1\_11 + [x^2\_9] + k\_10= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k\_1= 0

y^2\_0 + y^2\_10 + x^3\_12 + k\_1= 0

y^2\_5 + [y^2\_8] + [x^3\_10] + k\_6= 0

y^3\_0 + [y^3\_10] + [x^4\_12] + k\_15= 0

y^3\_1 + [y^3\_11] + [y^3\_14] + x^4\_1 + k\_11= 0

y^3\_1 + x^4\_5 + k\_11= 0

y^3\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k\_14= 0

y^3\_3 + y^3\_9 + x^4\_15 + k\_14= 0

y^4\_1 + x^5\_5 + k\_3= 0

[y^4\_2] + y^4\_8 + y^4\_15 + [x^5\_2] + k\_1= 0

y^4\_3 + [y^4\_9] + [y^4\_12] + x^5\_3 + k\_6= 0

y^4\_5 + y^4\_8 + x^5\_10 + k\_4= 0

y^5\_0 + x^6\_4 + k\_11= 0

y^5\_0 + y^5\_10 + x^6\_12 + k\_11= 0

[y^5\_2] + y^5\_8 + [x^6\_14] + k\_15= 0

y^5\_3 + y^5\_9 + [y^5\_12] + [x^6\_3] + k\_12= 0

y^5\_5 + y^5\_8 + x^6\_10 + k\_10= 0

[y^5\_6] + y^5\_9 + x^6\_11 + k\_8= 0

y^6\_0 + x^7\_4 + k\_3= 0

y^6\_0 + y^6\_10 + x^7\_12 + k\_3= 0

[y^6\_3] + [y^6\_9] + y^6\_12 + x^7\_3 + k\_4= 0

y^6\_4 + y^6\_11 + x^7\_9 + k\_1= 0

[y^6\_6] + [y^6\_9] + x^7\_11 + k\_0= 0

y^7\_3 + y^7\_9 + y^7\_12 + x^8\_3 + k\_10= 0

y^7\_4 + y^7\_11 + x^8\_9 + k\_15= 0

y^8\_3 + y^8\_9 + [y^8\_12] + [x^9\_3] + k\_2= 0

S(x^2\_5) + y^2\_5= 0

S(x^2\_13) + y^2\_13= 0

S(x^3\_0) + y^3\_0= 0

S(x^3\_12) + y^3\_12= 0

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

S(x^4\_3) + y^4\_3= 0

S(x^4\_5) + y^4\_5= 0

S(x^4\_15) + y^4\_15= 0

S(x^5\_3) + y^5\_3= 0

S(x^5\_5) + y^5\_5= 0

S(x^5\_10) + y^5\_10= 0

S(x^6\_4) + y^6\_4= 0

S(x^6\_10) + y^6\_10= 0

S(x^6\_11) + y^6\_11= 0

S(x^6\_12) + y^6\_12= 0

S(x^7\_3) + y^7\_3= 0

S(x^7\_4) + y^7\_4= 0

S(x^7\_9) + y^7\_9= 0

S(x^7\_11) + y^7\_11= 0

S(x^7\_12) + y^7\_12= 0

S(x^8\_3) + y^8\_3= 0

S(x^8\_9) + y^8\_9= 0

the 5 th Minimal Constraint set is:

[y^0\_0] + y^0\_10 + [y^0\_13] + x^1\_0 + k\_0= 0

[y^0\_0] + y^0\_10 + [x^1\_12] + k\_0= 0

y^1\_0 + y^1\_10 + x^2\_12 + k\_9= 0

[y^1\_7] + y^1\_10 + [x^2\_8] + k\_11= 0

[y^2\_3] + [y^2\_9] + y^2\_12 + x^3\_3 + k\_5= 0

y^3\_3 + x^4\_7 + k\_14= 0

[y^4\_0] + y^4\_10 + [x^5\_12] + k\_7= 0

y^4\_7 + y^4\_10 + x^5\_8 + k\_5= 0

[y^5\_2] + y^5\_8 + [x^6\_14] + k\_15= 0

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

S(x^2\_12) + y^2\_12= 0

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

S(x^4\_7) + y^4\_7= 0

S(x^5\_8) + y^5\_8= 0

the 6 th Minimal Constraint set is:

[y^0\_0] + y^0\_10 + [y^0\_13] + x^1\_0 + k\_0= 0

[y^0\_0] + y^0\_10 + [x^1\_12] + k\_0= 0

y^0\_2 + y^0\_8 + [y^0\_15] + [x^1\_2] + k\_2= 0

y^0\_2 + y^0\_8 + x^1\_14 + k\_2= 0

y^1\_0 + y^1\_10 + x^2\_12 + k\_9= 0

y^1\_1 + y^1\_11 + y^1\_14 + x^2\_1 + k\_15= 0

y^1\_1 + x^2\_5 + k\_15= 0

[y^1\_4] + y^1\_11 + [x^2\_9] + k\_10= 0

[y^1\_7] + y^1\_10 + [x^2\_8] + k\_11= 0

y^2\_1 + x^3\_5 + k\_7= 0

[y^2\_3] + [y^2\_9] + y^2\_12 + x^3\_3 + k\_5= 0

[y^2\_3] + [y^2\_9] + x^3\_15 + k\_5= 0

y^2\_5 + [y^2\_8] + [x^3\_10] + k\_6= 0

[y^3\_2] + y^3\_8 + y^3\_15 + [x^4\_2] + k\_9= 0

y^3\_3 + x^4\_7 + k\_14= 0

y^3\_5 + y^3\_8 + x^4\_10 + k\_12= 0

y^4\_7 + y^4\_10 + x^5\_8 + k\_5= 0

[y^5\_2] + y^5\_8 + [x^6\_14] + k\_15= 0

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

S(x^1\_14) + y^1\_14= 0

S(x^2\_1) + y^2\_1= 0

S(x^2\_5) + y^2\_5= 0

S(x^2\_12) + y^2\_12= 0

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

S(x^3\_5) + y^3\_5= 0

S(x^3\_15) + y^3\_15= 0

S(x^4\_7) + y^4\_7= 0

S(x^4\_10) + y^4\_10= 0

S(x^5\_8) + y^5\_8= 0

the 7 th Minimal Constraint set is:

y^0\_2 + y^0\_8 + [y^0\_15] + [x^1\_2] + k\_2= 0

y^0\_2 + y^0\_8 + x^1\_14 + k\_2= 0

[y^0\_3] + [y^0\_9] + x^1\_15 + k\_3= 0

y^1\_0 + x^2\_4 + k\_9= 0

y^1\_0 + y^1\_10 + x^2\_12 + k\_9= 0

y^1\_1 + y^1\_11 + y^1\_14 + x^2\_1 + k\_15= 0

y^1\_1 + x^2\_5 + k\_15= 0

[y^1\_2] + y^1\_8 + y^1\_15 + x^2\_2 + k\_8= 0

[y^1\_2] + y^1\_8 + x^2\_14 + k\_8= 0

y^1\_3 + y^1\_9 + [y^1\_12] + [x^2\_3] + k\_13= 0

y^1\_3 + y^1\_9 + x^2\_15 + k\_13= 0

[y^1\_4] + y^1\_11 + [x^2\_9] + k\_10= 0

[y^1\_7] + y^1\_10 + [x^2\_8] + k\_11= 0

y^2\_1 + y^2\_11 + y^2\_14 + x^3\_1 + k\_7= 0

y^2\_2 + [y^2\_8] + y^2\_15 + [x^3\_2] + k\_0= 0

[y^2\_3] + [y^2\_9] + y^2\_12 + x^3\_3 + k\_5= 0

y^2\_4 + y^2\_11 + x^3\_9 + k\_2= 0

y^2\_5 + [y^2\_8] + [x^3\_10] + k\_6= 0

y^3\_1 + x^4\_5 + k\_11= 0

y^3\_3 + y^3\_9 + x^4\_15 + k\_14= 0

[y^4\_2] + y^4\_8 + y^4\_15 + [x^5\_2] + k\_1= 0

y^4\_3 + x^5\_7 + k\_6= 0

y^4\_3 + [y^4\_9] + [x^5\_15] + k\_6= 0

y^4\_5 + y^4\_8 + x^5\_10 + k\_4= 0

y^5\_7 + y^5\_10 + x^6\_8 + k\_14= 0

[y^6\_5] + y^6\_8 + [x^7\_10] + k\_2= 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\_4) + y^2\_4= 0

S(x^2\_5) + y^2\_5= 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\_3) + y^3\_3= 0

S(x^3\_9) + y^3\_9= 0

S(x^4\_5) + y^4\_5= 0

S(x^4\_15) + y^4\_15= 0

S(x^5\_7) + y^5\_7= 0

S(x^5\_10) + y^5\_10= 0

S(x^6\_8) + y^6\_8= 0

the 8 th Minimal Constraint set is:

y^0\_2 + y^0\_8 + [y^0\_15] + [x^1\_2] + k\_2= 0

y^0\_2 + y^0\_8 + x^1\_14 + k\_2= 0

[y^0\_3] + [y^0\_9] + x^1\_15 + k\_3= 0

y^1\_0 + x^2\_4 + k\_9= 0

y^1\_0 + y^1\_10 + x^2\_12 + k\_9= 0

y^1\_1 + y^1\_11 + y^1\_14 + x^2\_1 + k\_15= 0

y^1\_1 + y^1\_11 + x^2\_13 + k\_15= 0

[y^1\_2] + y^1\_8 + y^1\_15 + x^2\_2 + k\_8= 0

[y^1\_2] + y^1\_8 + x^2\_14 + k\_8= 0

[y^1\_7] + y^1\_10 + [x^2\_8] + k\_11= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k\_1= 0

y^2\_0 + y^2\_10 + x^3\_12 + k\_1= 0

y^2\_1 + y^2\_11 + y^2\_14 + x^3\_1 + k\_7= 0

y^2\_2 + x^3\_6 + k\_0= 0

[y^2\_3] + [y^2\_9] + y^2\_12 + x^3\_3 + k\_5= 0

y^2\_4 + y^2\_11 + x^3\_9 + k\_2= 0

y^3\_0 + [y^3\_10] + [x^4\_12] + k\_15= 0

y^3\_1 + x^4\_5 + k\_11= 0

y^3\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k\_14= 0

y^3\_3 + x^4\_7 + k\_14= 0

y^3\_3 + y^3\_9 + x^4\_15 + k\_14= 0

y^3\_6 + y^3\_9 + x^4\_11 + k\_10= 0

[y^4\_0] + y^4\_10 + [y^4\_13] + x^5\_0 + k\_7= 0

y^4\_1 + x^5\_5 + k\_3= 0

y^4\_1 + y^4\_11 + x^5\_13 + k\_3= 0

[y^4\_2] + y^4\_8 + y^4\_15 + [x^5\_2] + k\_1= 0

y^4\_3 + [y^4\_9] + [x^5\_15] + k\_6= 0

y^4\_5 + y^4\_8 + x^5\_10 + k\_4= 0

y^4\_7 + y^4\_10 + x^5\_8 + k\_5= 0

y^5\_0 + y^5\_10 + y^5\_13 + x^6\_0 + k\_11= 0

[y^5\_1] + [y^5\_11] + x^6\_13 + k\_13= 0

y^5\_5 + y^5\_8 + x^6\_10 + k\_10= 0

y^6\_0 + y^6\_10 + y^6\_13 + x^7\_0 + k\_3= 0

y^7\_0 + [y^7\_10] + [x^8\_12] + k\_13= 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\_4) + y^2\_4= 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\_6) + y^3\_6= 0

S(x^3\_9) + y^3\_9= 0

S(x^3\_12) + y^3\_12= 0

S(x^4\_3) + y^4\_3= 0

S(x^4\_5) + y^4\_5= 0

S(x^4\_7) + y^4\_7= 0

S(x^4\_11) + y^4\_11= 0

S(x^4\_15) + y^4\_15= 0

S(x^5\_0) + y^5\_0= 0

S(x^5\_5) + y^5\_5= 0

S(x^5\_8) + y^5\_8= 0

S(x^5\_10) + y^5\_10= 0

S(x^5\_13) + y^5\_13= 0

S(x^6\_0) + y^6\_0= 0

S(x^6\_10) + y^6\_10= 0

S(x^6\_13) + y^6\_13= 0

S(x^7\_0) + y^7\_0= 0

the 9 th Minimal Constraint set is:

y^4\_3 + [y^4\_9] + [y^4\_12] + x^5\_3 + k\_6= 0

y^4\_3 + [y^4\_9] + [x^5\_15] + k\_6= 0

y^5\_3 + y^5\_9 + [y^5\_12] + [x^6\_3] + k\_12= 0

[y^5\_6] + y^5\_9 + x^6\_11 + k\_8= 0

[y^6\_1] + y^6\_11 + [x^7\_13] + k\_5= 0

S(x^5\_3) + y^5\_3= 0

S(x^6\_11) + y^6\_11= 0

the 10 th Minimal Constraint set is:

[y^0\_0] + y^0\_10 + [y^0\_13] + x^1\_0 + k\_0= 0

[y^0\_0] + y^0\_10 + [x^1\_12] + k\_0= 0

y^1\_0 + y^1\_10 + x^2\_12 + k\_9= 0

y^1\_1 + x^2\_5 + k\_15= 0

y^1\_1 + y^1\_11 + x^2\_13 + k\_15= 0

y^1\_3 + y^1\_9 + [y^1\_12] + [x^2\_3] + k\_13= 0

y^1\_3 + y^1\_9 + x^2\_15 + k\_13= 0

[y^1\_4] + y^1\_11 + [x^2\_9] + k\_10= 0

[y^1\_7] + y^1\_10 + [x^2\_8] + k\_11= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k\_1= 0

y^2\_0 + y^2\_10 + x^3\_12 + k\_1= 0

y^2\_2 + [y^2\_8] + y^2\_15 + [x^3\_2] + k\_0= 0

y^2\_2 + x^3\_6 + k\_0= 0

[y^2\_3] + [y^2\_9] + y^2\_12 + x^3\_3 + k\_5= 0

y^2\_5 + [y^2\_8] + [x^3\_10] + k\_6= 0

y^3\_0 + x^4\_4 + k\_15= 0

y^3\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k\_14= 0

y^3\_6 + y^3\_9 + x^4\_11 + k\_10= 0

y^4\_3 + [y^4\_9] + [y^4\_12] + x^5\_3 + k\_6= 0

y^4\_4 + y^4\_11 + x^5\_9 + k\_0= 0

y^5\_3 + y^5\_9 + [y^5\_12] + [x^6\_3] + k\_12= 0

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

S(x^2\_5) + y^2\_5= 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\_3) + y^3\_3= 0

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

S(x^3\_12) + y^3\_12= 0

S(x^4\_3) + y^4\_3= 0

S(x^4\_4) + y^4\_4= 0

S(x^4\_11) + y^4\_11= 0

S(x^5\_3) + y^5\_3= 0

S(x^5\_9) + y^5\_9= 0

the 11 th Minimal Constraint set is:

y^1\_1 + x^2\_5 + k\_15= 0

y^1\_1 + y^1\_11 + x^2\_13 + k\_15= 0

[y^1\_4] + y^1\_11 + [x^2\_9] + k\_10= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k\_1= 0

y^2\_0 + y^2\_10 + x^3\_12 + k\_1= 0

y^2\_5 + [y^2\_8] + [x^3\_10] + k\_6= 0

y^3\_0 + [y^3\_10] + [x^4\_12] + k\_15= 0

y^3\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k\_14= 0

y^3\_3 + y^3\_9 + x^4\_15 + k\_14= 0

[y^3\_7] + [y^3\_10] + x^4\_8 + k\_13= 0

[y^4\_2] + y^4\_8 + y^4\_15 + [x^5\_2] + k\_1= 0

y^4\_3 + [y^4\_9] + [x^5\_15] + k\_6= 0

S(x^2\_5) + y^2\_5= 0

S(x^2\_13) + y^2\_13= 0

S(x^3\_0) + y^3\_0= 0

S(x^3\_12) + y^3\_12= 0

S(x^4\_3) + y^4\_3= 0

S(x^4\_8) + y^4\_8= 0

S(x^4\_15) + y^4\_15= 0

the 12 th Minimal Constraint set is:

y^1\_1 + x^2\_5 + k\_15= 0

y^1\_1 + y^1\_11 + x^2\_13 + k\_15= 0

[y^1\_4] + y^1\_11 + [x^2\_9] + k\_10= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k\_1= 0

y^2\_0 + y^2\_10 + x^3\_12 + k\_1= 0

y^2\_5 + [y^2\_8] + [x^3\_10] + k\_6= 0

y^3\_0 + [y^3\_10] + [x^4\_12] + k\_15= 0

y^3\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k\_14= 0

y^3\_3 + y^3\_9 + x^4\_15 + k\_14= 0

[y^4\_2] + y^4\_8 + y^4\_15 + [x^5\_2] + k\_1= 0

[y^4\_2] + y^4\_8 + [x^5\_14] + k\_1= 0

y^4\_3 + [y^4\_9] + [x^5\_15] + k\_6= 0

S(x^2\_5) + y^2\_5= 0

S(x^2\_13) + y^2\_13= 0

S(x^3\_0) + y^3\_0= 0

S(x^3\_12) + y^3\_12= 0

S(x^4\_3) + y^4\_3= 0

S(x^4\_15) + y^4\_15= 0

the 13 th Minimal Constraint set is:

[y^0\_0] + y^0\_10 + [y^0\_13] + x^1\_0 + k\_0= 0

[y^0\_0] + y^0\_10 + [x^1\_12] + k\_0= 0

y^0\_2 + y^0\_8 + [y^0\_15] + [x^1\_2] + k\_2= 0

y^0\_2 + y^0\_8 + x^1\_14 + k\_2= 0

[y^0\_3] + [y^0\_9] + x^1\_15 + k\_3= 0

y^1\_0 + x^2\_4 + k\_9= 0

y^1\_1 + y^1\_11 + y^1\_14 + x^2\_1 + k\_15= 0

y^1\_1 + x^2\_5 + k\_15= 0

[y^1\_2] + y^1\_8 + y^1\_15 + x^2\_2 + k\_8= 0

[y^1\_2] + y^1\_8 + x^2\_14 + k\_8= 0

[y^1\_4] + y^1\_11 + [x^2\_9] + k\_10= 0

y^2\_1 + y^2\_11 + y^2\_14 + x^3\_1 + k\_7= 0

y^2\_2 + x^3\_6 + k\_0= 0

y^2\_4 + y^2\_11 + x^3\_9 + k\_2= 0

y^2\_5 + [y^2\_8] + [x^3\_10] + k\_6= 0

y^3\_1 + [y^3\_11] + [y^3\_14] + x^4\_1 + k\_11= 0

y^3\_6 + y^3\_9 + x^4\_11 + k\_10= 0

y^4\_1 + y^4\_11 + [y^4\_14] + [x^5\_1] + k\_3= 0

S(x^1\_0) + y^1\_0= 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\_4) + y^2\_4= 0

S(x^2\_5) + y^2\_5= 0

S(x^2\_14) + y^2\_14= 0

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

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

S(x^3\_9) + y^3\_9= 0

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

S(x^4\_11) + y^4\_11= 0

the 14 th Minimal Constraint set is:

y^0\_2 + y^0\_8 + [y^0\_15] + [x^1\_2] + k\_2= 0

y^0\_2 + y^0\_8 + x^1\_14 + k\_2= 0

y^1\_0 + x^2\_4 + k\_9= 0

y^1\_0 + y^1\_10 + x^2\_12 + k\_9= 0

y^1\_1 + y^1\_11 + y^1\_14 + x^2\_1 + k\_15= 0

y^1\_1 + y^1\_11 + x^2\_13 + k\_15= 0

[y^1\_7] + y^1\_10 + [x^2\_8] + k\_11= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k\_1= 0

y^2\_0 + y^2\_10 + x^3\_12 + k\_1= 0

y^2\_1 + y^2\_11 + x^3\_13 + k\_7= 0

[y^2\_3] + [y^2\_9] + y^2\_12 + x^3\_3 + k\_5= 0

y^2\_4 + y^2\_11 + x^3\_9 + k\_2= 0

y^3\_0 + [y^3\_10] + y^3\_13 + [x^4\_0] + k\_15= 0

y^3\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k\_14= 0

y^4\_3 + [y^4\_9] + [x^5\_15] + k\_6= 0

S(x^1\_14) + y^1\_14= 0

S(x^2\_1) + y^2\_1= 0

S(x^2\_4) + y^2\_4= 0

S(x^2\_12) + y^2\_12= 0

S(x^2\_13) + y^2\_13= 0

S(x^3\_0) + y^3\_0= 0

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

S(x^3\_9) + y^3\_9= 0

S(x^3\_12) + y^3\_12= 0

S(x^3\_13) + y^3\_13= 0

S(x^4\_3) + y^4\_3= 0

the 15 th Minimal Constraint set is:

y^0\_2 + y^0\_8 + [y^0\_15] + [x^1\_2] + k\_2= 0

y^0\_2 + y^0\_8 + x^1\_14 + k\_2= 0

[y^0\_3] + [y^0\_9] + x^1\_15 + k\_3= 0

y^1\_0 + x^2\_4 + k\_9= 0

y^1\_0 + y^1\_10 + x^2\_12 + k\_9= 0

y^1\_1 + y^1\_11 + y^1\_14 + x^2\_1 + k\_15= 0

y^1\_1 + y^1\_11 + x^2\_13 + k\_15= 0

[y^1\_2] + y^1\_8 + y^1\_15 + x^2\_2 + k\_8= 0

[y^1\_2] + y^1\_8 + x^2\_14 + k\_8= 0

y^1\_3 + y^1\_9 + [y^1\_12] + [x^2\_3] + k\_13= 0

y^1\_3 + y^1\_9 + x^2\_15 + k\_13= 0

[y^1\_7] + y^1\_10 + [x^2\_8] + k\_11= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k\_1= 0

y^2\_0 + y^2\_10 + x^3\_12 + k\_1= 0

y^2\_1 + y^2\_11 + y^2\_14 + x^3\_1 + k\_7= 0

y^2\_2 + [y^2\_8] + y^2\_15 + [x^3\_2] + k\_0= 0

[y^2\_3] + [y^2\_9] + y^2\_12 + x^3\_3 + k\_5= 0

y^2\_4 + y^2\_11 + x^3\_9 + k\_2= 0

y^3\_0 + [y^3\_10] + [x^4\_12] + k\_15= 0

y^3\_1 + [y^3\_11] + [x^4\_13] + k\_11= 0

y^3\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k\_14= 0

y^4\_3 + [y^4\_9] + [x^5\_15] + k\_6= 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\_4) + y^2\_4= 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^2\_15) + y^2\_15= 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\_9) + y^3\_9= 0

S(x^3\_12) + y^3\_12= 0

S(x^4\_3) + y^4\_3= 0

the 16 th Minimal Constraint set is:

[y^2\_3] + [y^2\_9] + x^3\_15 + k\_5= 0

[y^3\_2] + y^3\_8 + y^3\_15 + [x^4\_2] + k\_9= 0

[y^3\_2] + y^3\_8 + [x^4\_14] + k\_9= 0

S(x^3\_15) + y^3\_15= 0

the 17 th Minimal Constraint set is:

y^1\_3 + y^1\_9 + [y^1\_12] + [x^2\_3] + k\_13= 0

y^1\_3 + y^1\_9 + x^2\_15 + k\_13= 0

y^2\_2 + [y^2\_8] + y^2\_15 + [x^3\_2] + k\_0= 0

y^2\_2 + [y^2\_8] + [x^3\_14] + k\_0= 0

S(x^2\_15) + y^2\_15= 0

the 18 th Minimal Constraint set is:

[y^1\_2] + x^2\_6 + k\_8= 0

y^2\_6 + [y^2\_9] + [x^3\_11] + k\_4= 0

S(x^2\_6) + y^2\_6= 0

the 19 th Minimal Constraint set is:

[y^0\_6] + [y^0\_9] + x^1\_11 + k\_6= 0

[y^1\_4] + y^1\_11 + [x^2\_9] + k\_10= 0

S(x^1\_11) + y^1\_11= 0

the 20 th Minimal Constraint set is:

[y^0\_0] + [x^1\_4] + k\_0= 0

the 21 th Minimal Constraint set is:

[y^0\_3] + [x^1\_7] + k\_3= 0

the 22 th Minimal Constraint set is:

[y^2\_3] + [x^3\_7] + k\_5= 0

the 23 th Minimal Constraint set is:

[y^3\_2] + [x^4\_6] + k\_9= 0

the 24 th Minimal Constraint set is:

[y^4\_0] + [x^5\_4] + k\_7= 0

the 25 th Minimal Constraint set is:

[y^4\_2] + [x^5\_6] + k\_1= 0

the 26 th Minimal Constraint set is:

[y^4\_6] + [y^4\_9] + [x^5\_11] + k\_2= 0

the 27 th Minimal Constraint set is:

[y^5\_1] + [y^5\_11] + [y^5\_14] + [x^6\_1] + k\_13= 0

the 28 th Minimal Constraint set is:

[y^5\_1] + [x^6\_5] + k\_13= 0

the 29 th Minimal Constraint set is:

[y^5\_2] + [x^6\_6] + k\_15= 0

the 30 th Minimal Constraint set is:

[y^5\_4] + [y^5\_11] + [x^6\_9] + k\_9= 0

the 31 th Minimal Constraint set is:

[y^6\_1] + [x^7\_5] + k\_5= 0

the 32 th Minimal Constraint set is:

[y^6\_3] + [x^7\_7] + k\_4= 0