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

the 0 Th Minimal constraint set is:

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

[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

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

the 1 Th Minimal constraint set is:

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 + y^1\_11 + x^2\_13 + k1\_15 + k2\_15\_0= 0

y^1\_6 + y^1\_9 + x^2\_11 + k1\_12 + k2\_12\_0= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k1\_1 + k2\_1\_1= 0

y^2\_0 + y^2\_10 + x^3\_12 + k1\_1 + k2\_1\_1= 0

[y^2\_1] + y^2\_11 + x^3\_13 + k1\_7 + k2\_7\_1= 0

[y^2\_3] + y^2\_9 + y^2\_12 + x^3\_3 + 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^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\_0 + y^3\_10 + x^4\_12 + k1\_15 + k2\_15\_1= 0

y^3\_1 + x^4\_5 + k1\_11 + k2\_11\_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\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k1\_14 + k2\_14\_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

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\_4 + y^4\_11 + x^5\_9 + k1\_0 + k2\_0\_2= 0

y^4\_5 + y^4\_8 + x^5\_10 + k1\_4 + k2\_4\_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 + 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 + 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^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 + 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\_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] + 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\_1 + y^7\_11 + y^7\_14 + x^8\_1 + k1\_14 + k2\_14\_3= 0

y^7\_1 + x^8\_5 + 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\_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

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

the 2 Th Minimal constraint set is:

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

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

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

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

the 3 Th Minimal constraint set is:

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

y^1\_0 + y^1\_10 + x^2\_12 + k1\_9 + k2\_9\_0= 0

y^1\_2 + x^2\_6 + k1\_8 + k2\_8\_0= 0

y^1\_2 + y^1\_8 + x^2\_14 + k1\_8 + k2\_8\_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\_5 + y^1\_8 + x^2\_10 + k1\_14 + k2\_14\_0= 0

y^2\_0 + y^2\_10 + x^3\_12 + k1\_1 + k2\_1\_1= 0

[y^2\_1] + y^2\_11 + y^2\_14 + x^3\_1 + k1\_7 + k2\_7\_1= 0

[y^2\_1] + y^2\_11 + x^3\_13 + k1\_7 + k2\_7\_1= 0

[y^2\_3] + y^2\_9 + y^2\_12 + x^3\_3 + k1\_5 + k2\_5\_1= 0

y^2\_6 + y^2\_9 + x^3\_11 + k1\_4 + k2\_4\_1= 0

y^3\_0 + y^3\_10 + y^3\_13 + x^4\_0 + k1\_15 + k2\_15\_1= 0

y^3\_0 + y^3\_10 + x^4\_12 + k1\_15 + k2\_15\_1= 0

y^3\_1 + x^4\_5 + k1\_11 + k2\_11\_1= 0

y^3\_1 + y^3\_11 + x^4\_13 + k1\_11 + k2\_11\_1= 0

y^3\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k1\_14 + k2\_14\_1= 0

y^3\_3 + x^4\_7 + k1\_14 + k2\_14\_1= 0

y^3\_3 + y^3\_9 + x^4\_15 + k1\_14 + k2\_14\_1= 0

y^4\_0 + [y^4\_10] + y^4\_13 + x^5\_0 + 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 + x^5\_6 + 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 + 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\_5 + y^4\_8 + x^5\_10 + k1\_4 + k2\_4\_2= 0

y^4\_7 + [y^4\_10] + x^5\_8 + k1\_5 + k2\_5\_2= 0

y^5\_0 + x^6\_4 + k1\_11 + k2\_11\_2= 0

y^5\_2 + y^5\_8 + y^5\_15 + x^6\_2 + k1\_15 + k2\_15\_2= 0

y^5\_3 + y^5\_9 + x^6\_15 + k1\_12 + k2\_12\_2= 0

y^5\_6 + y^5\_9 + x^6\_11 + k1\_8 + k2\_8\_2= 0

y^5\_7 + y^5\_10 + x^6\_8 + k1\_14 + k2\_14\_2= 0

y^6\_2 + y^6\_8 + y^6\_15 + x^7\_2 + k1\_7 + k2\_7\_3= 0

y^6\_4 + y^6\_11 + x^7\_9 + k1\_1 + k2\_1\_3= 0

y^7\_6 + y^7\_9 + x^8\_11 + k1\_9 + k2\_9\_3= 0

y^14\_1 + [y^14\_11] + x^15\_13 + k1\_0 + k2\_0\_7= 0

y^14\_5 + y^14\_8 + x^15\_10 + k1\_3 + k2\_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 + k1\_1 + k2\_1\_0= 0

y^0\_1 + y^0\_11 + x^1\_13 + k1\_1 + k2\_1\_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\_4 + y^0\_11 + x^1\_9 + k1\_4 + k2\_4\_0= 0

y^0\_5 + [y^0\_8] + x^1\_10 + k1\_5 + k2\_5\_0= 0

y^1\_0 + y^1\_10 + y^1\_13 + x^2\_0 + k1\_9 + k2\_9\_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 + y^1\_11 + x^2\_13 + k1\_15 + k2\_15\_0= 0

y^1\_2 + x^2\_6 + k1\_8 + k2\_8\_0= 0

y^1\_2 + y^1\_8 + x^2\_14 + k1\_8 + k2\_8\_0= 0

y^1\_3 + [x^2\_7] + k1\_13 + k2\_13\_0= 0

y^1\_3 + y^1\_9 + [x^2\_15] + k1\_13 + k2\_13\_0= 0

y^1\_5 + y^1\_8 + x^2\_10 + k1\_14 + k2\_14\_0= 0

y^1\_6 + y^1\_9 + x^2\_11 + k1\_12 + k2\_12\_0= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k1\_1 + k2\_1\_1= 0

y^2\_0 + x^3\_4 + k1\_1 + k2\_1\_1= 0

y^2\_0 + y^2\_10 + x^3\_12 + k1\_1 + k2\_1\_1= 0

[y^2\_1] + y^2\_11 + y^2\_14 + x^3\_1 + 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 + y^2\_8 + x^3\_14 + 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\_3] + x^3\_7 + k1\_5 + k2\_5\_1= 0

y^2\_4 + y^2\_11 + x^3\_9 + k1\_2 + k2\_2\_1= 0

y^2\_6 + y^2\_9 + x^3\_11 + k1\_4 + k2\_4\_1= 0

[y^2\_7] + y^2\_10 + [x^3\_8] + k1\_3 + k2\_3\_1= 0

y^3\_0 + y^3\_10 + x^4\_12 + k1\_15 + k2\_15\_1= 0

y^3\_1 + y^3\_11 + y^3\_14 + x^4\_1 + k1\_11 + k2\_11\_1= 0

y^3\_1 + x^4\_5 + k1\_11 + k2\_11\_1= 0

y^3\_1 + y^3\_11 + x^4\_13 + k1\_11 + k2\_11\_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\_3 + y^3\_9 + y^3\_12 + x^4\_3 + k1\_14 + k2\_14\_1= 0

y^3\_4 + y^3\_11 + x^4\_9 + k1\_8 + k2\_8\_1= 0

y^3\_7 + y^3\_10 + x^4\_8 + k1\_13 + k2\_13\_1= 0

y^4\_0 + [y^4\_10] + y^4\_13 + x^5\_0 + k1\_7 + k2\_7\_2= 0

y^4\_0 + [y^4\_10] + x^5\_12 + k1\_7 + k2\_7\_2= 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

y^4\_1 + y^4\_11 + x^5\_13 + k1\_3 + k2\_3\_2= 0

y^4\_3 + y^4\_9 + y^4\_12 + x^5\_3 + k1\_6 + k2\_6\_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\_5 + y^4\_8 + x^5\_10 + k1\_4 + k2\_4\_2= 0

[y^4\_6] + y^4\_9 + [x^5\_11] + k1\_2 + k2\_2\_2= 0

y^5\_0 + y^5\_10 + y^5\_13 + x^6\_0 + k1\_11 + k2\_11\_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] + [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 + y^5\_12 + x^6\_3 + k1\_12 + k2\_12\_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\_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

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

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

the 5 Th Minimal constraint set is:

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\_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\_4 + y^0\_11 + x^1\_9 + k1\_4 + k2\_4\_0= 0

y^0\_5 + [y^0\_8] + x^1\_10 + k1\_5 + k2\_5\_0= 0

y^1\_0 + y^1\_10 + y^1\_13 + x^2\_0 + 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\_2 + x^2\_6 + k1\_8 + k2\_8\_0= 0

y^1\_2 + y^1\_8 + x^2\_14 + k1\_8 + k2\_8\_0= 0

y^1\_3 + y^1\_9 + y^1\_12 + [x^2\_3] + k1\_13 + k2\_13\_0= 0

y^1\_3 + [x^2\_7] + k1\_13 + k2\_13\_0= 0

y^1\_4 + y^1\_11 + x^2\_9 + k1\_10 + k2\_10\_0= 0

y^1\_5 + y^1\_8 + x^2\_10 + k1\_14 + k2\_14\_0= 0

y^1\_6 + y^1\_9 + x^2\_11 + k1\_12 + k2\_12\_0= 0

y^2\_0 + x^3\_4 + k1\_1 + k2\_1\_1= 0

[y^2\_1] + y^2\_11 + y^2\_14 + x^3\_1 + 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\_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^2\_6 + y^2\_9 + x^3\_11 + k1\_4 + k2\_4\_1= 0

[y^2\_7] + y^2\_10 + [x^3\_8] + k1\_3 + k2\_3\_1= 0

y^3\_0 + y^3\_10 + y^3\_13 + x^4\_0 + k1\_15 + k2\_15\_1= 0

y^3\_0 + y^3\_10 + x^4\_12 + k1\_15 + k2\_15\_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\_4 + y^3\_11 + x^4\_9 + k1\_8 + k2\_8\_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\_0 + [x^5\_4] + k1\_7 + k2\_7\_2= 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

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

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

the 6 Th Minimal constraint set is:

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

y^1\_0 + y^1\_10 + x^2\_12 + k1\_9 + k2\_9\_0= 0

y^1\_1 + x^2\_5 + k1\_15 + k2\_15\_0= 0

y^1\_1 + y^1\_11 + x^2\_13 + k1\_15 + k2\_15\_0= 0

y^1\_2 + x^2\_6 + k1\_8 + k2\_8\_0= 0

y^1\_2 + y^1\_8 + x^2\_14 + k1\_8 + k2\_8\_0= 0

y^1\_4 + y^1\_11 + x^2\_9 + k1\_10 + k2\_10\_0= 0

y^1\_5 + y^1\_8 + x^2\_10 + k1\_14 + k2\_14\_0= 0

y^2\_0 + y^2\_10 + y^2\_13 + x^3\_0 + k1\_1 + k2\_1\_1= 0

[y^2\_1] + y^2\_11 + y^2\_14 + x^3\_1 + k1\_7 + k2\_7\_1= 0

[y^2\_1] + y^2\_11 + x^3\_13 + k1\_7 + k2\_7\_1= 0

y^2\_2 + x^3\_6 + k1\_0 + k2\_0\_1= 0

y^2\_2 + y^2\_8 + x^3\_14 + 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\_3] + y^2\_9 + x^3\_15 + k1\_5 + k2\_5\_1= 0

y^2\_5 + y^2\_8 + x^3\_10 + k1\_6 + k2\_6\_1= 0

y^2\_6 + y^2\_9 + x^3\_11 + k1\_4 + k2\_4\_1= 0

y^3\_0 + y^3\_10 + x^4\_12 + k1\_15 + k2\_15\_1= 0

y^3\_1 + y^3\_11 + y^3\_14 + x^4\_1 + k1\_11 + k2\_11\_1= 0

[y^3\_2] + [y^3\_8] + y^3\_15 + x^4\_2 + k1\_9 + k2\_9\_1= 0

[y^3\_2] + [y^3\_8] + x^4\_14 + 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\_1 + y^4\_11 + y^4\_14 + x^5\_1 + k1\_3 + k2\_3\_2= 0

y^4\_2 + y^4\_8 + y^4\_15 + x^5\_2 + k1\_1 + k2\_1\_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^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\_2 + y^5\_8 + x^6\_14 + 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\_6 + y^5\_9 + x^6\_11 + k1\_8 + k2\_8\_2= 0

[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\_2 + x^7\_6 + k1\_7 + k2\_7\_3= 0

y^6\_2 + y^6\_8 + x^7\_14 + k1\_7 + k2\_7\_3= 0

y^6\_6 + y^6\_9 + x^7\_11 + k1\_0 + k2\_0\_3= 0

y^7\_1 + y^7\_11 + y^7\_14 + x^8\_1 + k1\_14 + k2\_14\_3= 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\_5 + y^14\_8 + x^15\_10 + k1\_3 + k2\_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 + k1\_9 + k2\_9\_0= 0

the 8 Th Minimal constraint set is:

y^8\_1 + x^9\_5 + k1\_6 + k2\_6\_4= 0