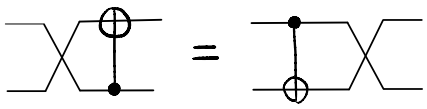
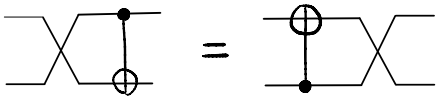
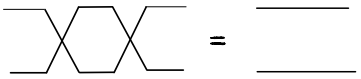
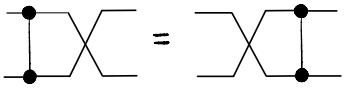
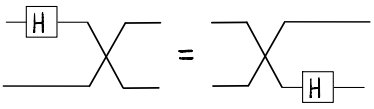
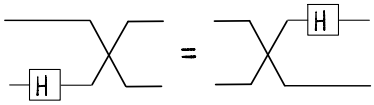
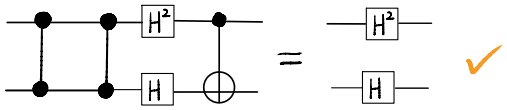
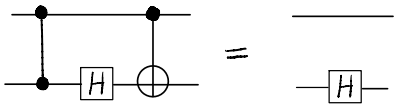
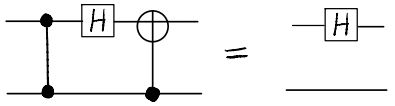
R_{31} : (1)  (2) 

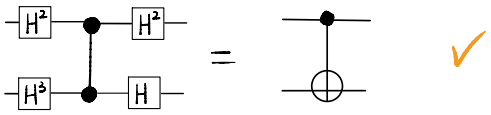
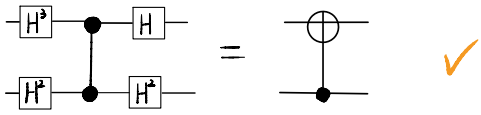
R_{16} :  R_{17} : 

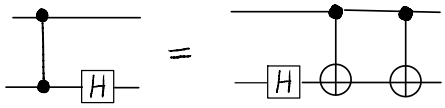
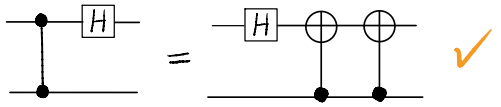
R_{19} : (1)  (2) 

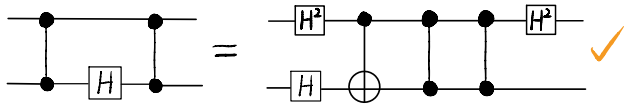
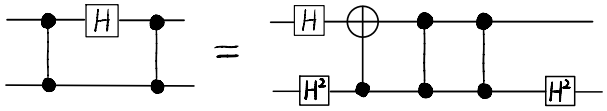
C2 : $H^4 = I$

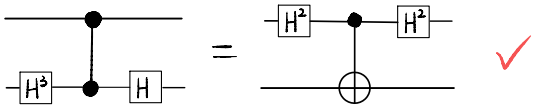
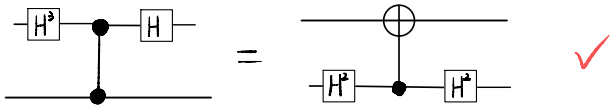
Lem N R_{32} :  ✓

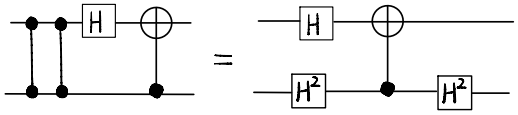
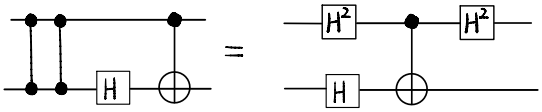
R_{32}^1 :  ✓ R_{32}^2 :  ✓

R_{32}^3 :  ✓ R_{32}^4 :  ✓

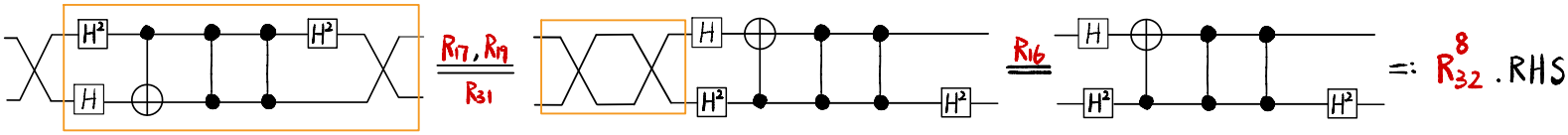
R_{32}^5 :  ✓ R_{32}^6 :  ✓

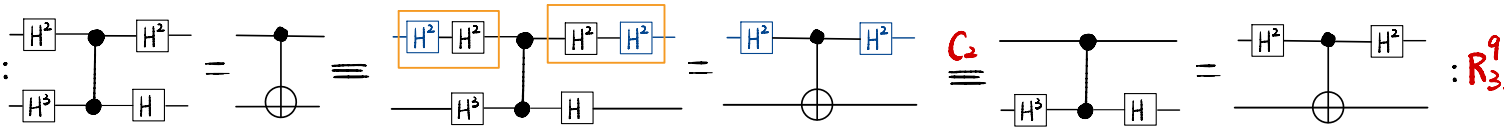
R_{32}^7 :  ✓ R_{32}^8 :  ✓

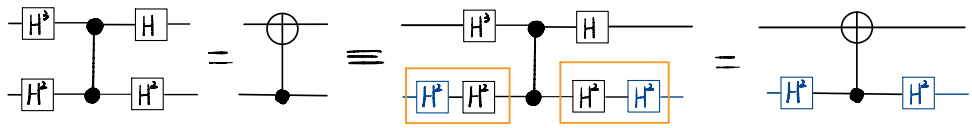
R_{32}^9 :  ✓ R_{32}^{10} :  ✓

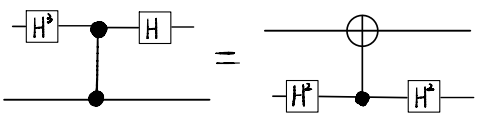
R_{32}^{11} :  R_{32}^{12} : 

Proof cont. R_{32}^8 .LHS := 



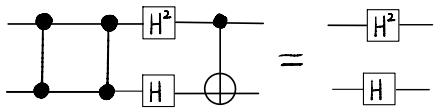
R_{32}^3 : 

R_{32}^4 : 



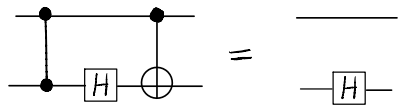
C2 : $H^4 = I$

Lem N R_{32} :



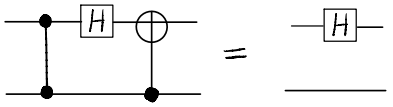
✓

R'_{32} :



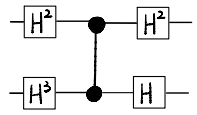
✓

R^2_{32} :



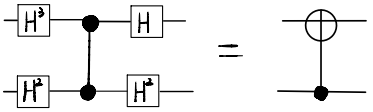
✓

R^3_{32} :



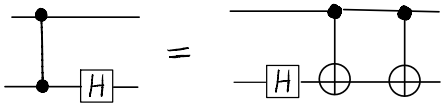
✓

R^4_{32} :



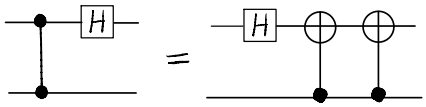
✓

R^5_{32} :



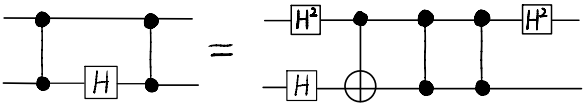
✓

R^6_{32} :



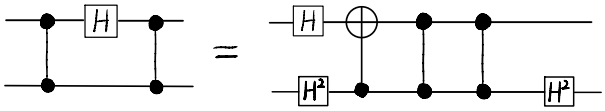
✓

R^7_{32} :



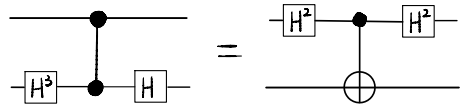
✓

R^8_{32} :



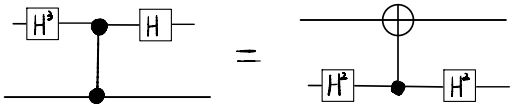
✓

R^9_{32} :



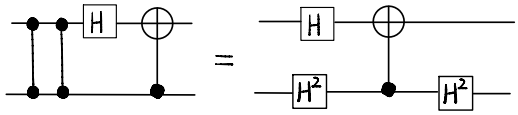
✓

R^{10}_{32} :



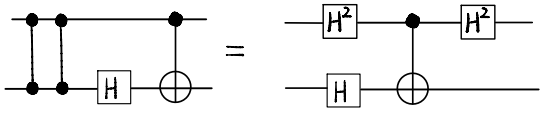
✓

R^{11}_{32} :



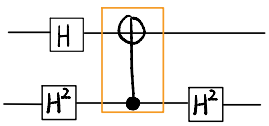
✓

R^{12}_{32} :

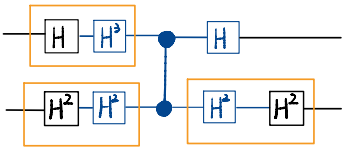


✓

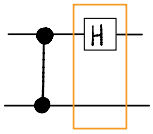
Proof cont. $R^{11}_{32}.RHS :=$



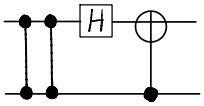
$\overset{R^4_{32}}{=}$



$\overset{C_2}{=}$

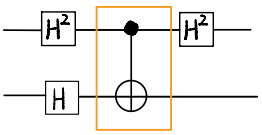


$\overset{R^2_{32}}{=}$

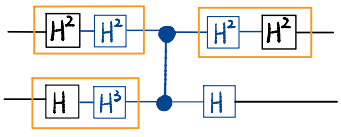


$=: R^{11}_{32}.LHS$

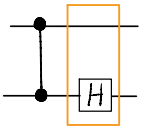
$R^{12}_{32}.RHS :=$



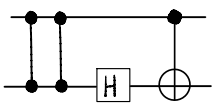
$\overset{R^3_{32}}{=}$



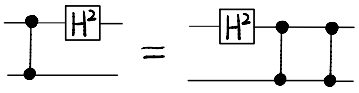
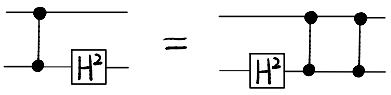
$\overset{C_2}{=}$



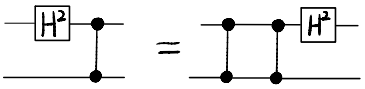
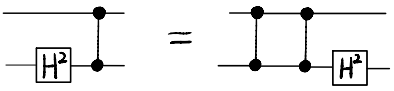
$\overset{R^1_{32}}{=}$

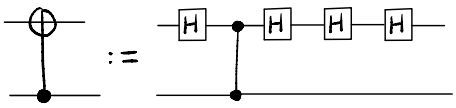


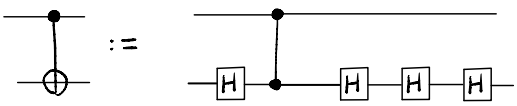
$=: R^{12}_{32}.LHS$

C_8 : (1)  (2) 

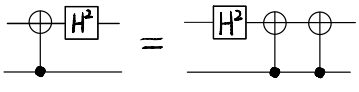
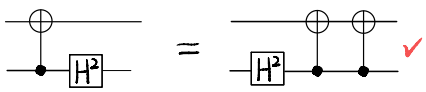
$C_2 : H^4 = I$

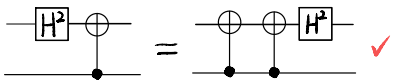
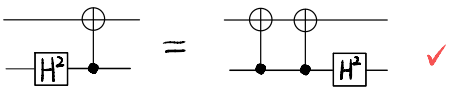
C_8^1 : (1)  (2) 

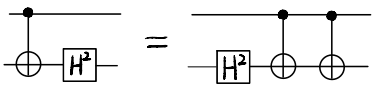
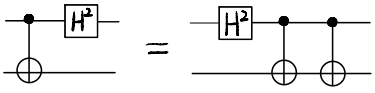
Def 2 : 

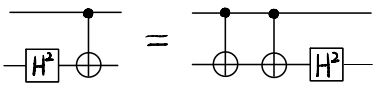
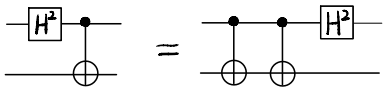


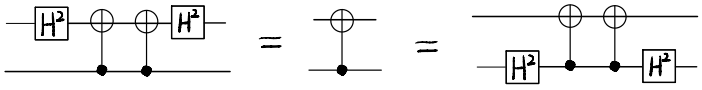
Lem 0 Def 2, C_2 & C_8 imply

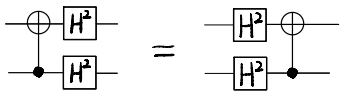
C_8^5 : (1)  ✓ (2)  ✓

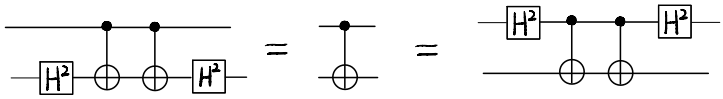
C_8^6 : (1)  ✓ (2)  ✓

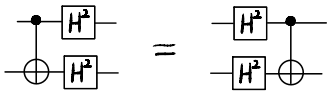
C_8^7 : (1)  ✓ (2) 

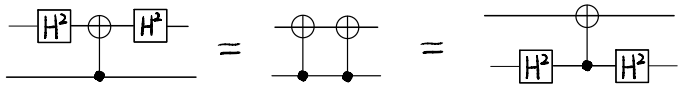
C_8^8 : (1)  (2) 

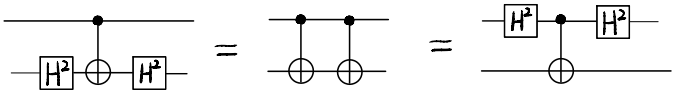
C_8^9 : 

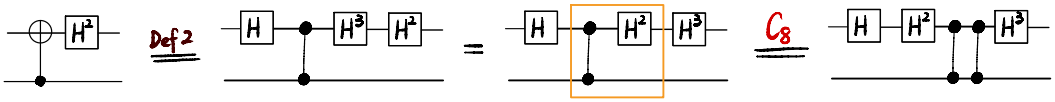
C_8^{13} : 

C_8^{10} : 

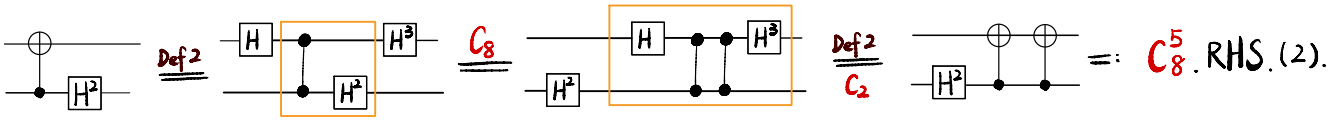
C_8^{14} : 

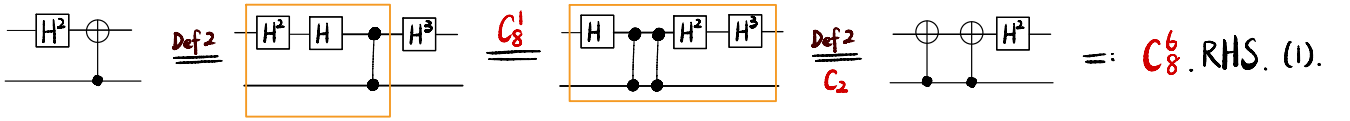
C_8^{11} : 

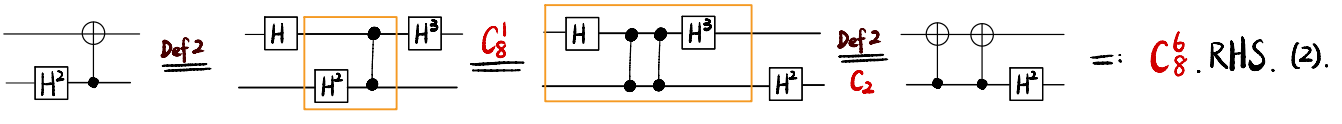
C_8^{12} : 

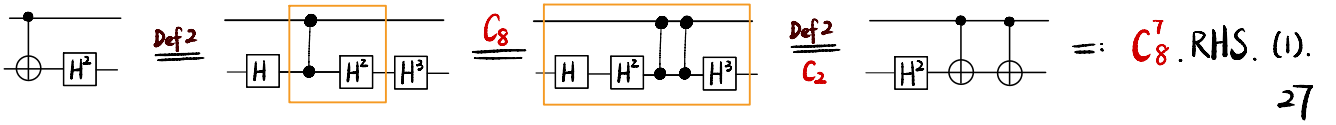
Proof: C_8^5.LHS.(1) := 

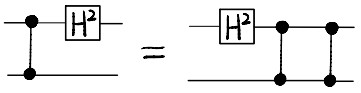
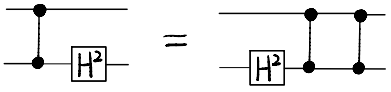
=  =: C_8^5.RHS.(1).

C_8^5.LHS.(2) := 

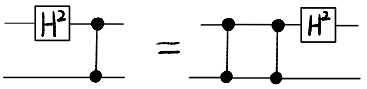
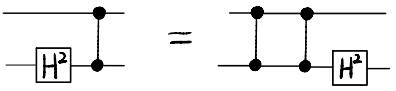
C_8^6.LHS.(1) := 

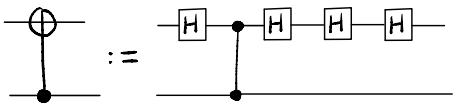
C_8^6.LHS.(2) := 

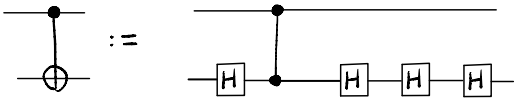
C_8^7.LHS.(1) := 

C_8 : (1)  (2) 

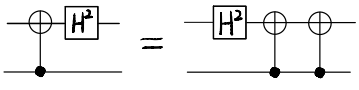
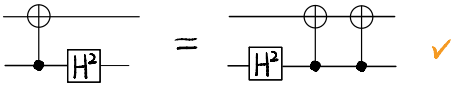
$C_2 : H^4 = I$

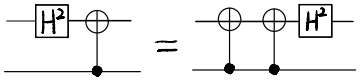
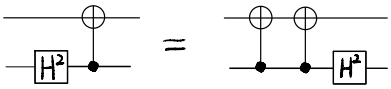
C_8' : (1)  (2) 

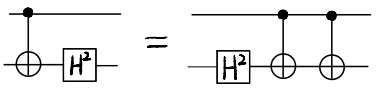
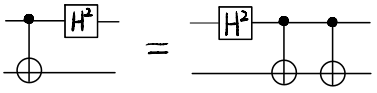
Def 2 : 

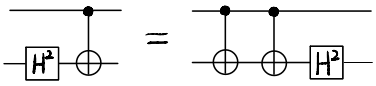
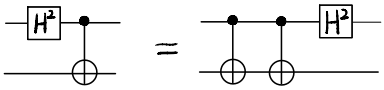


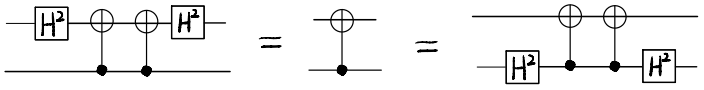
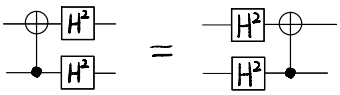
Lem 0 Def 2, C_2 & C_8 imply

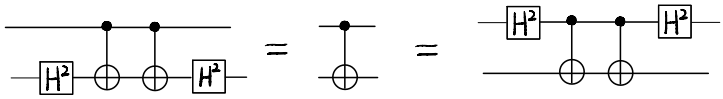
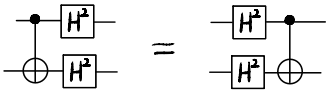
C_8^5 : (1)  ✓ (2)  ✓

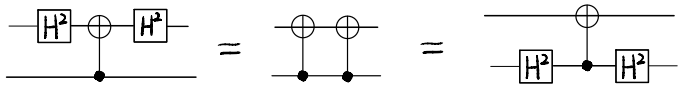
C_8^6 : (1)  ✓ (2)  ✓

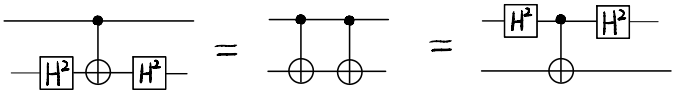
C_8^7 : (1)  ✓ (2)  ✓

C_8^8 : (1)  ✓ (2)  ✓

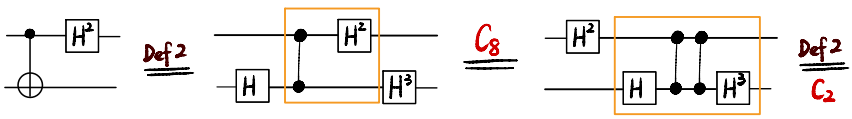
C_8^9 :  ✓ C_8^{13} : 

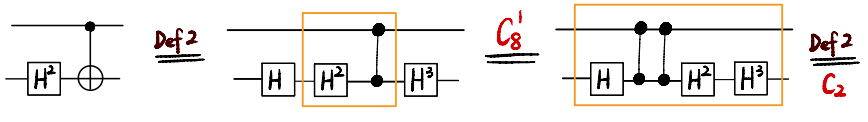
C_8^{10} :  C_8^{14} : 

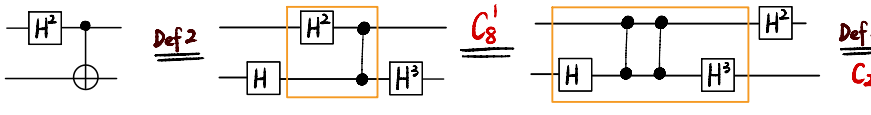
C_8^{11} : 

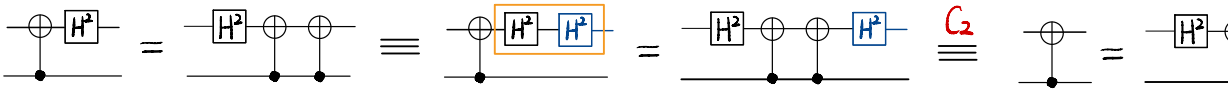
C_8^{12} : 

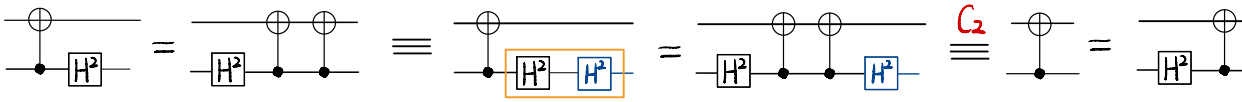
Proof cont.

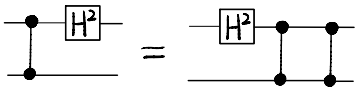
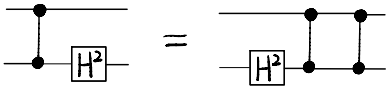
C_8^7.LHS.(2) :=  =: C_8^7.RHS.(2).

C_8^8.LHS.(1) :=  =: C_8^8.RHS.(1).

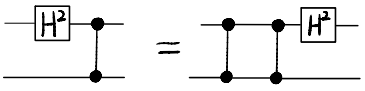
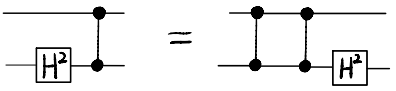
C_8^8.LHS.(2) :=  =: C_8^8.RHS.(2).

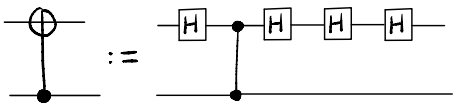
C_8^5 :  : C_8^9

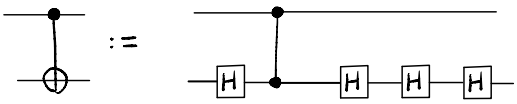
C_8^5 :  : C_8^9

C_8 : (1)  (2) 

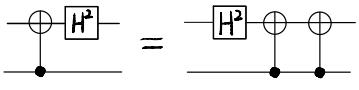
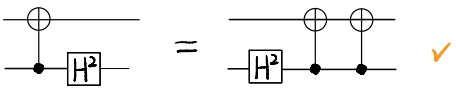
C_2 : $H^4 = I$

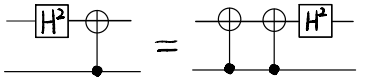
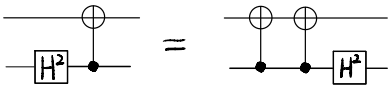
C_8^1 : (1)  (2) 

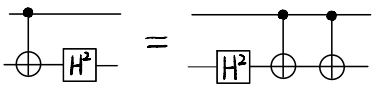
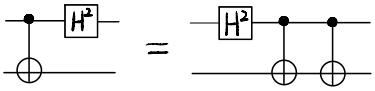
Def 2: 

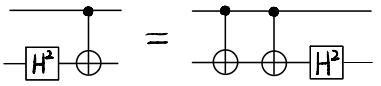
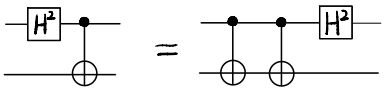


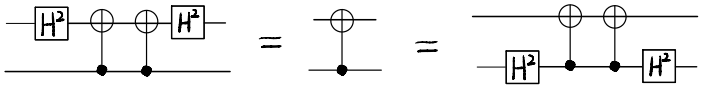
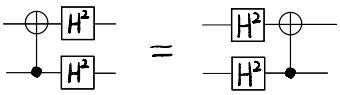
Lem 0 Def 2, C_2 & C_8 imply

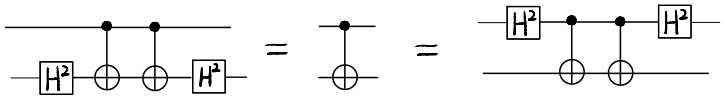
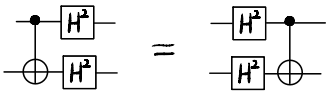
C_8^5: (1)  ✓ (2)  ✓

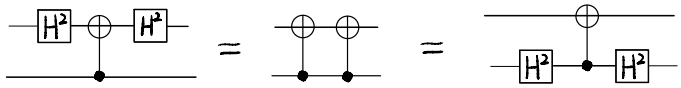
C_8^6: (1)  ✓ (2)  ✓

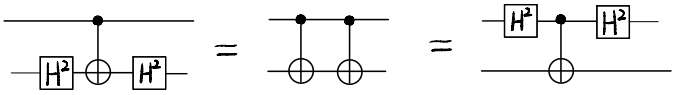
C_8^7: (1)  ✓ (2)  ✓

C_8^8: (1)  ✓ (2)  ✓

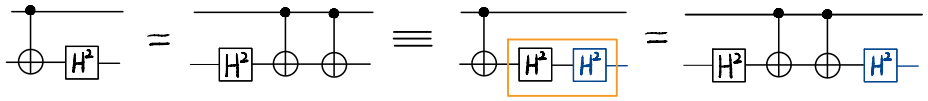
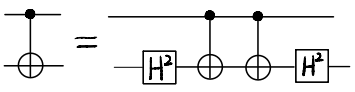
C_8^9:  ✓ C_8^{13}: 

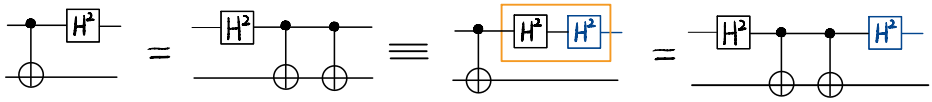
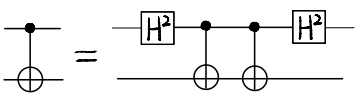
C_8^{10}:  ✓ C_8^{14}: 

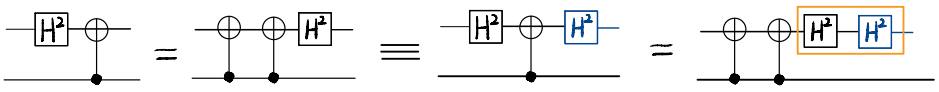
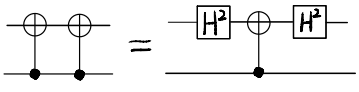
C_8^{11}:  ✓

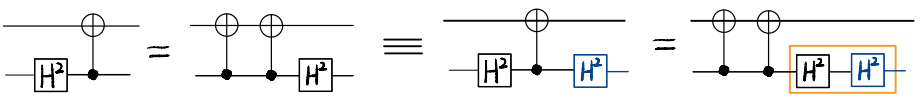
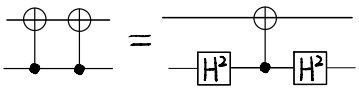
C_8^{12}:  ✓

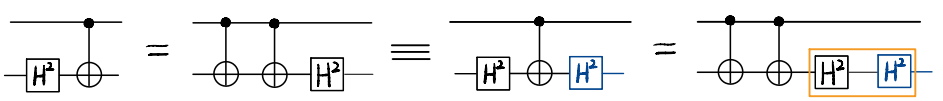
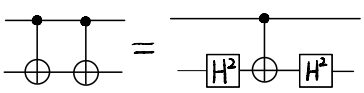
Proof cont.

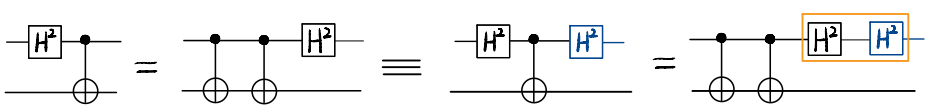
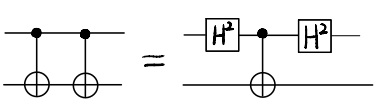
C_8^7:  $\overset{C_2}{\equiv}$  : C_8^{10}

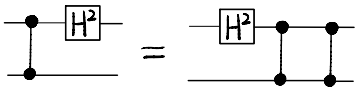
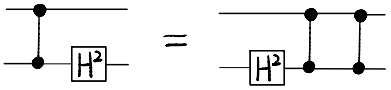
C_8^7:  $\overset{C_2}{\equiv}$  : C_8^{10}

C_8^6:  $\overset{C_2}{\equiv}$  : C_8^{11}

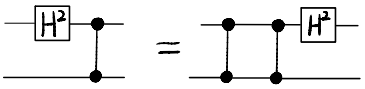
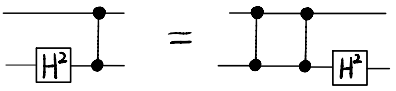
C_8^6:  $\overset{C_2}{\equiv}$  : C_8^{11}

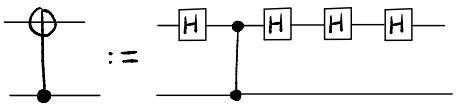
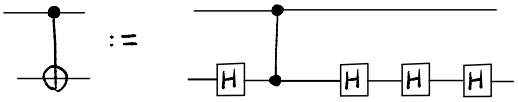
C_8^8:  $\overset{C_2}{\equiv}$  : C_8^{12}

C_8^8:  $\overset{C_2}{\equiv}$  : C_8^{12}

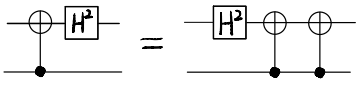
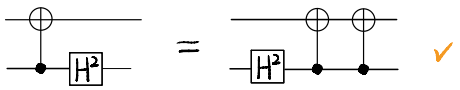
C_8 : (1)  (2) 

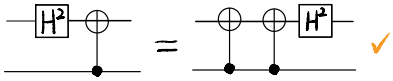
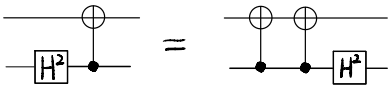
$C_2 : H^4 = I$

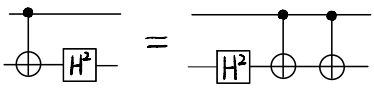
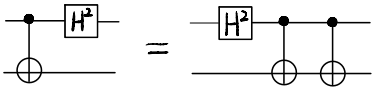
C_8^1: (1)  (2) 

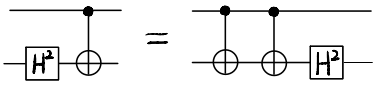
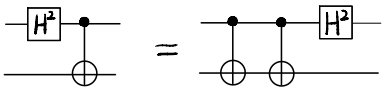
Def 2:  

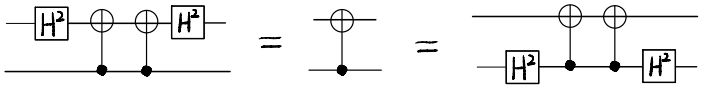
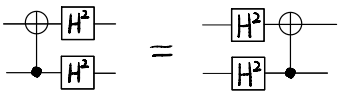
Lem 0 Def 2, C_2 & C_8 imply

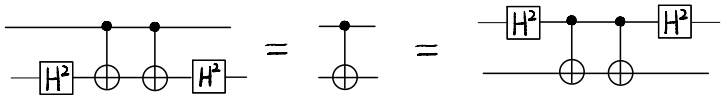
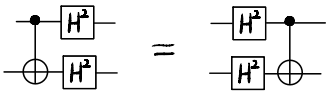
C_8^5: (1)  ✓ (2)  ✓

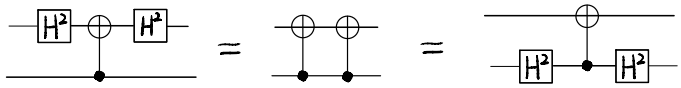
C_8^6: (1)  ✓ (2)  ✓

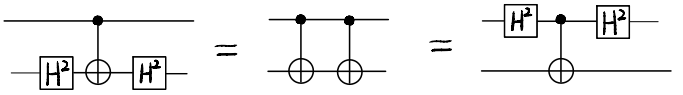
C_8^7: (1)  ✓ (2)  ✓

C_8^8: (1)  ✓ (2)  ✓

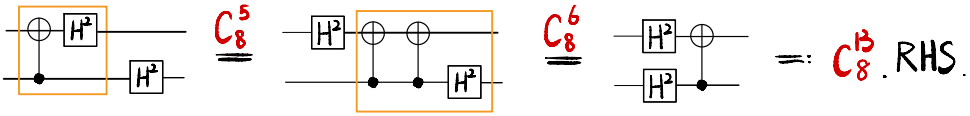
C_8^9:  ✓ C_8^{13}:  ✓

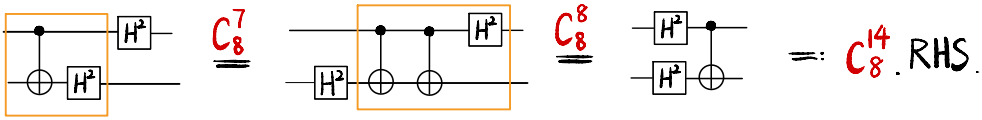
C_8^{10}:  ✓ C_8^{14}:  ✓

C_8^{11}:  ✓

C_8^{12}:  ✓

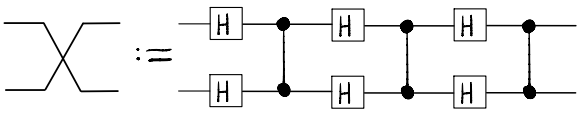
Proof cont.

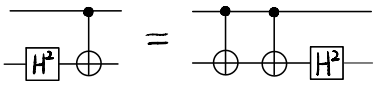
C_8^{13}. LHS :=  =: C_8^{13}. RHS.

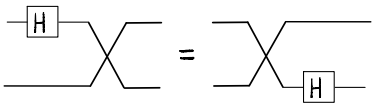
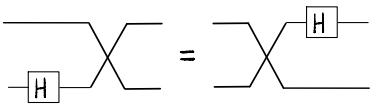
C_8^{14}. LHS :=  =: C_8^{14}. RHS.

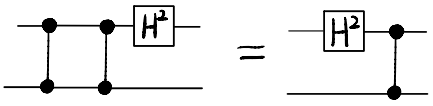
//

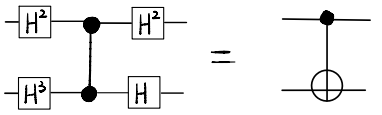
Def 2: 

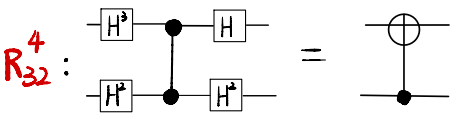
Def 3: 

C_8^8: (1) 

R_{19}: (1)  (2) 

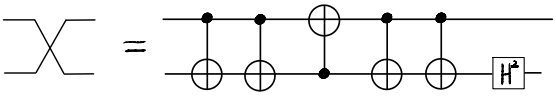
C_8^1: 

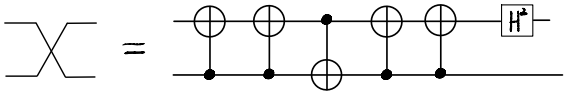
R_{32}^3: 

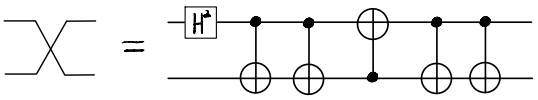
R_{32}^4: 

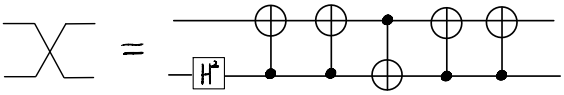
C2: $H^4 = I$

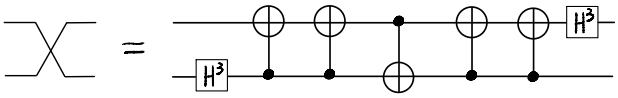
Lem P Def 2, Def 3, C_2, C_8, R_{19} & R_{32} imply

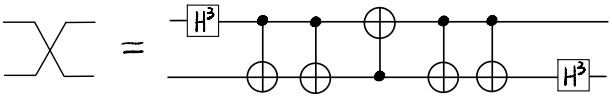
Def 4:  ✓

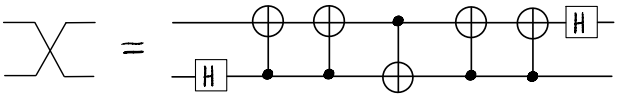
Def 5: 

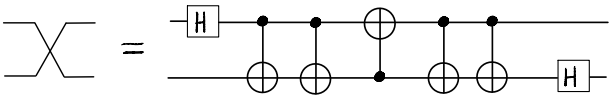
Def 6:  ✓

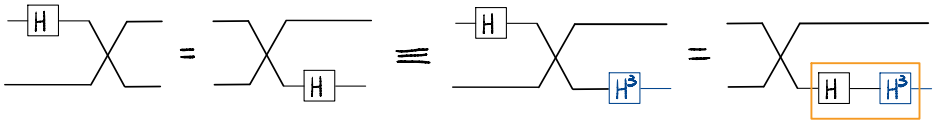
Def 7: 

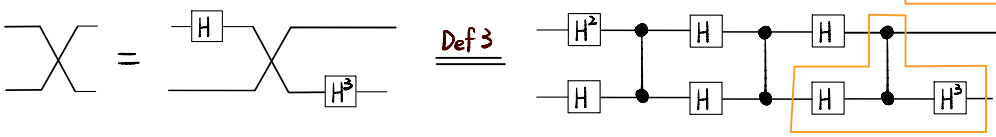
Def 8: 

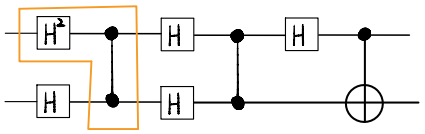
Def 9: 

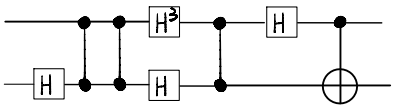
Def 10: 

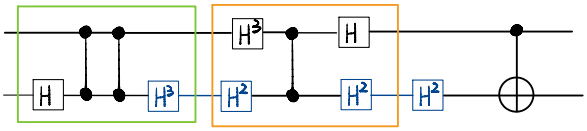
Def 11: 

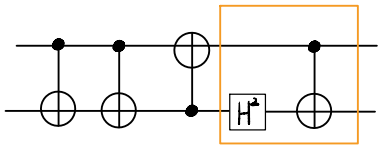
Proof: R_{19}: (1) 

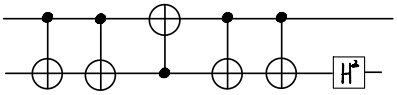
By C_2, 

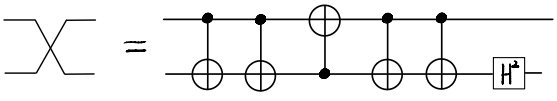
Def 2 

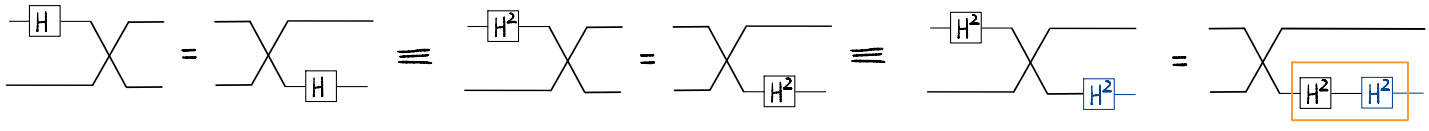
C_8^1 

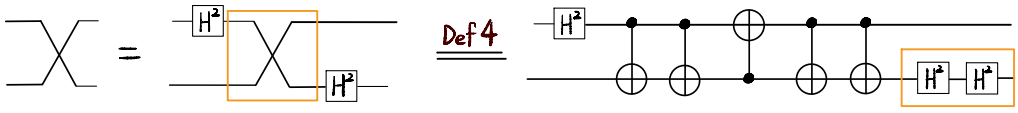
C_2 

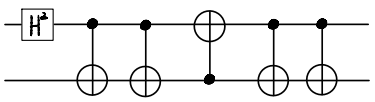
C_2, R_{32}^4, Def 2 

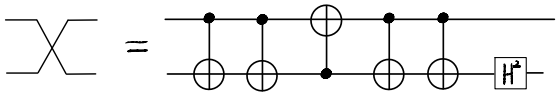
C_8^8  .

Hence Def 4: 

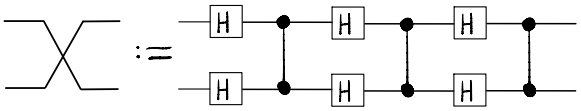
R_{19}: (1) 

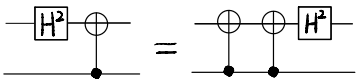
By C_2, 

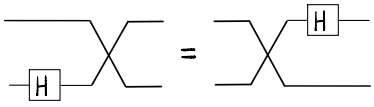
C_2  .

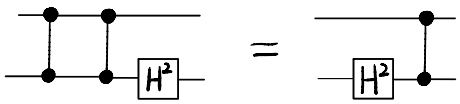
Hence Def 6: 

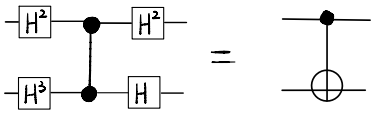
Def 2: 

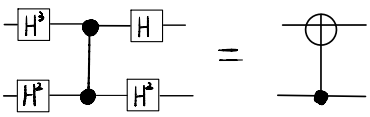
Def 3: 

C_8^6: (1) 

R_{19}: (2) 

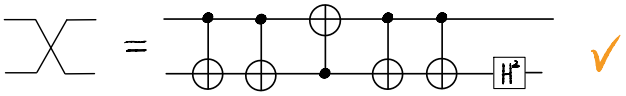
C_8^1: (2) 

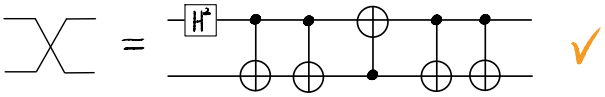
R_{32}^3: 

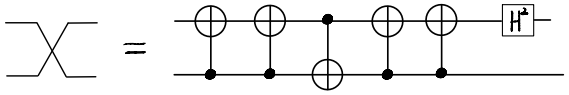
R_{32}^4: 

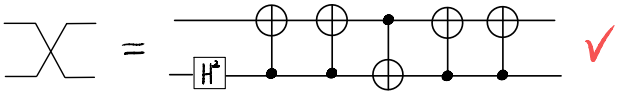
C2: $H^4 = I$

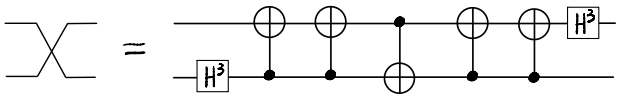
Lem P Def 2, Def 3, C_2, C_8, R_{19} & R_{32} imply

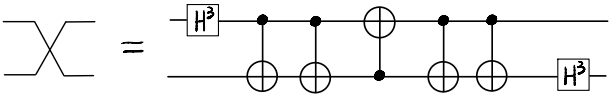
Def 4:  ✓

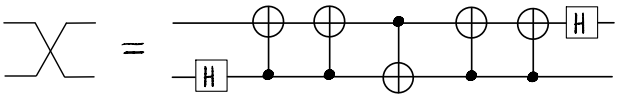
Def 6:  ✓

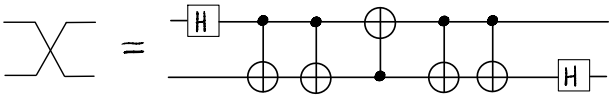
Def 5:  ✓

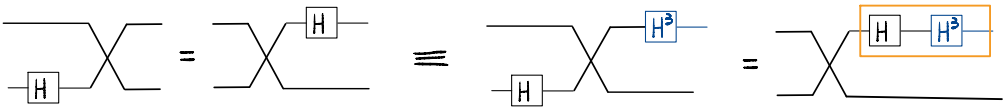
Def 7:  ✓

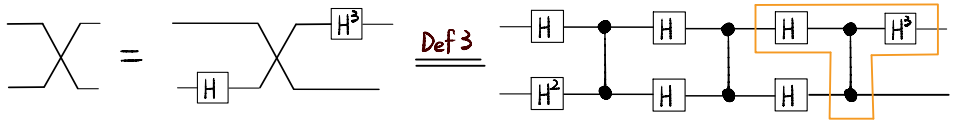
Def 8: 

Def 9: 

Def 10: 

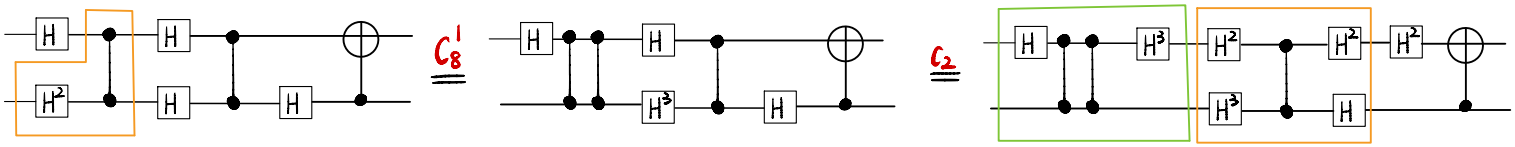
Def 11: 

Proof cont. R_{19}: (2) 

By C_2, 

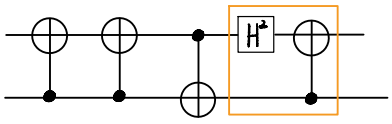
Def 3

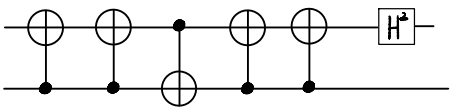
Def 2

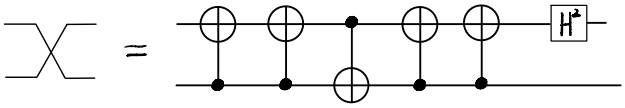


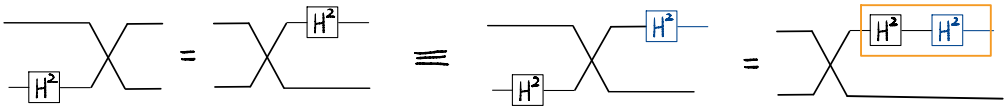
C_8^1

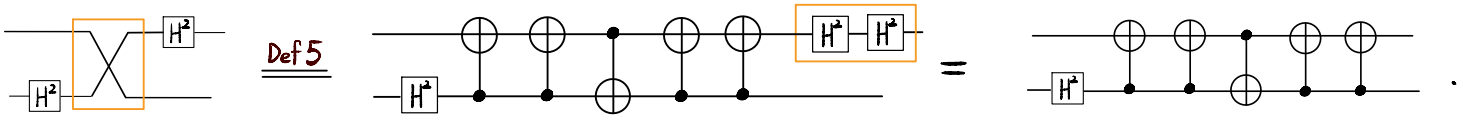
C_2

Def 2 / R_{32}^3 

C_8^6 

Hence Def 5: 

R_{19}: (2)  . By C_2, 



Def 5

.

Hence Def 7: