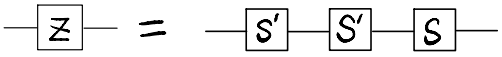
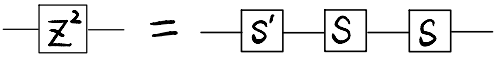
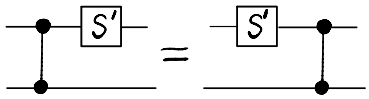
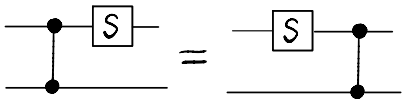
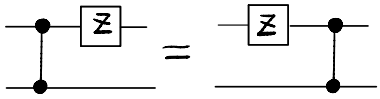
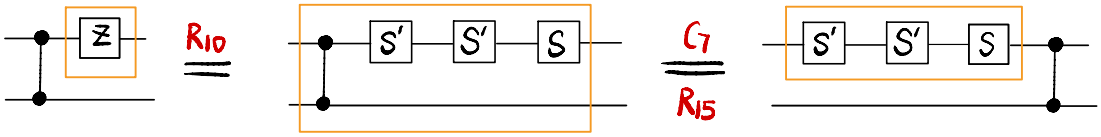
R10:  R11: 

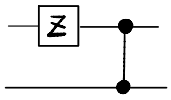
R15: (1) 

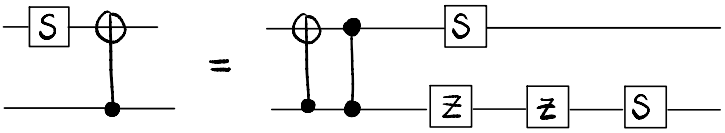
C1: $w^3 = 1$ C2: $H^4 = I$ C3: $S^3 = I$

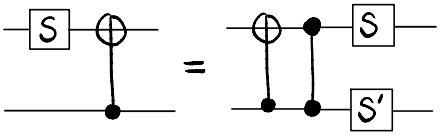
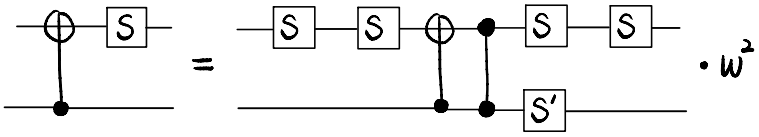
C7: (1)  (2) 

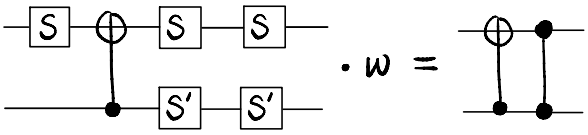
Lem N R13: (1) 

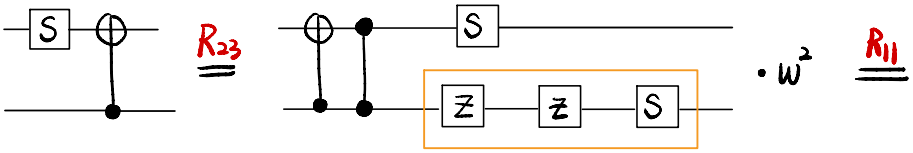
Proof: R13. (1). LHS := 

R10  =: R13. (1). RHS ▨

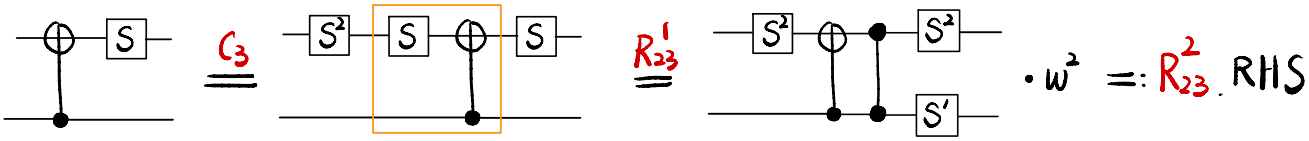
Lem O: R23:  implies

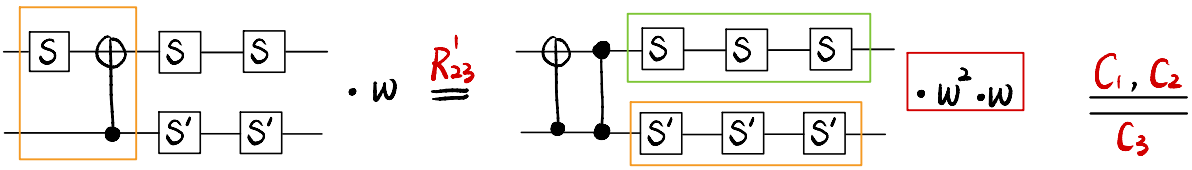
R_{23}^1:  , R_{23}^2: 

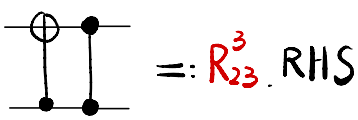
R_{23}^3: 

Proof: R_{23}^1. LHS := 

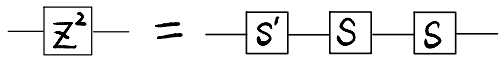
 =: R_{23}^1. RHS

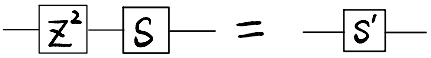
R_{23}^2. LHS := 

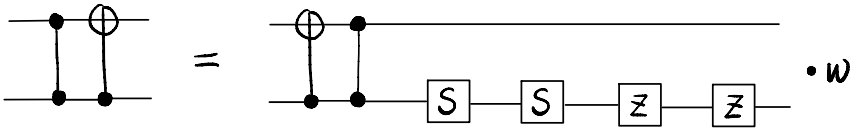
R_{23}^3. LHS := 

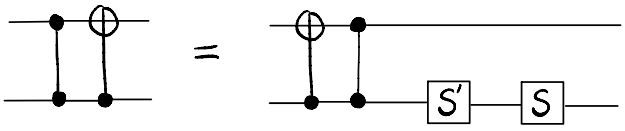
 =: R_{23}^3. RHS

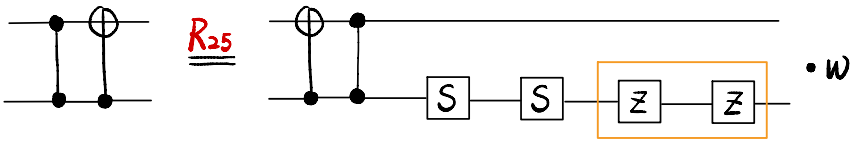
▨ 9

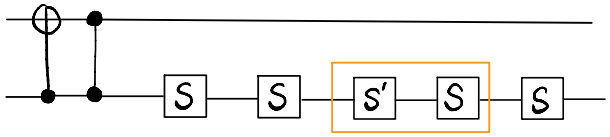
R11 :  C5 : $SH^2SH^2 = H^2SH^2S$ $SS' = S'S$ C3 : $S^3 = I$

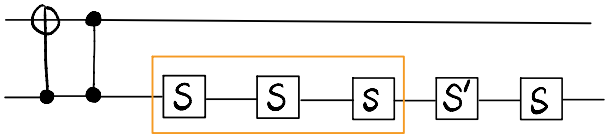
R_{11}' : 

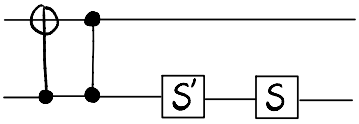
Lem P R_{25}: 

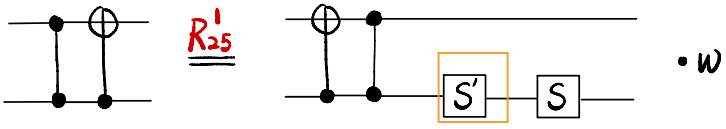
R_{25}': 

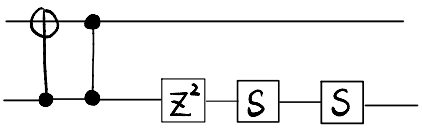
Proof : R_{25}'. LHS := 

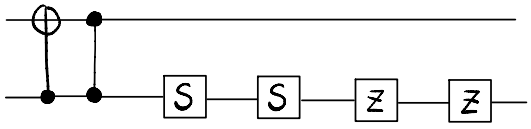
R_{11} 

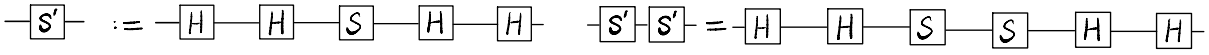
C_5 

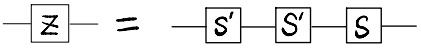
C_3  $=: R_{25}'$. RHS.

R_{25}. LHS := 

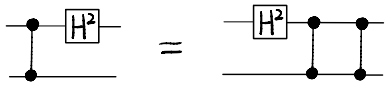
R_{11}' 

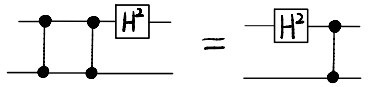
C_5  $=: R_{25}$. RHS.

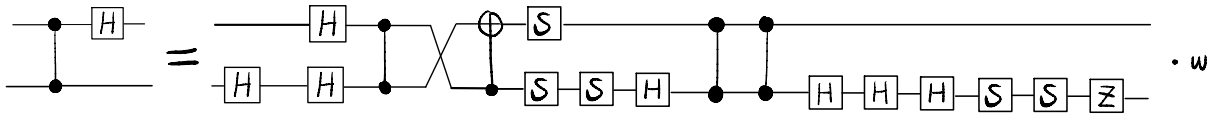
Def 1 : 

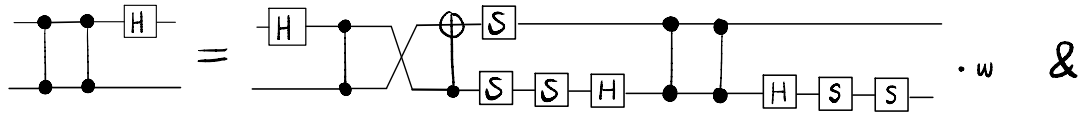
R10 : 

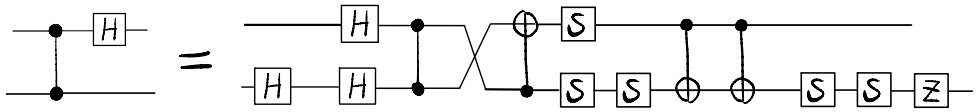
C2 : $H^4 = I$ C3 : $S^3 = I$ C5 : $SH^2SH^2 = H^2SH^2S$ $SS' = S'S$

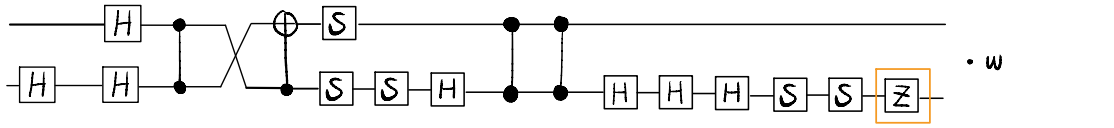
C8 : 

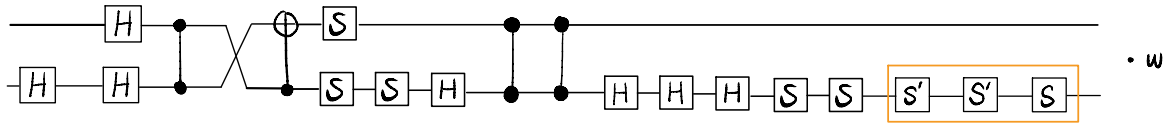
C_8' : 

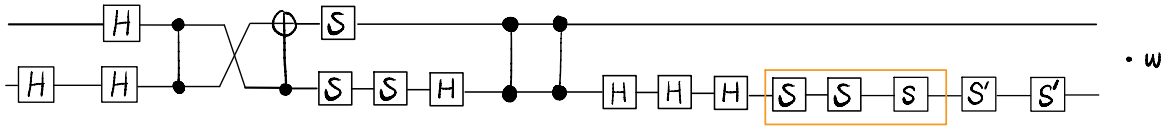
Lem Q R_{27}: 

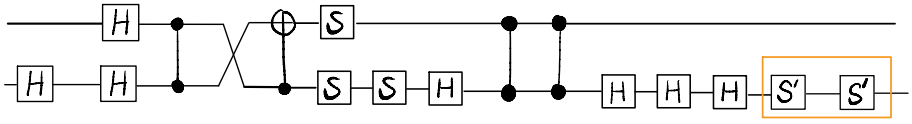
implies R_{27}': 

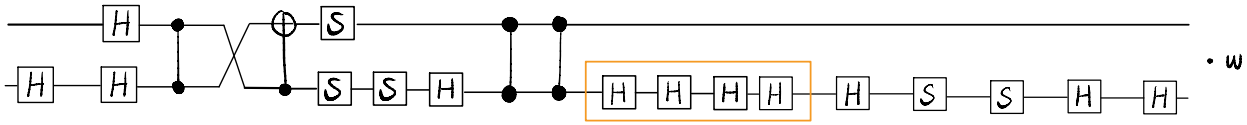
R_{27}^2: 

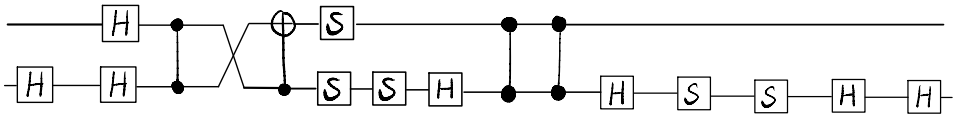
Proof: R_{27}. RHS := 

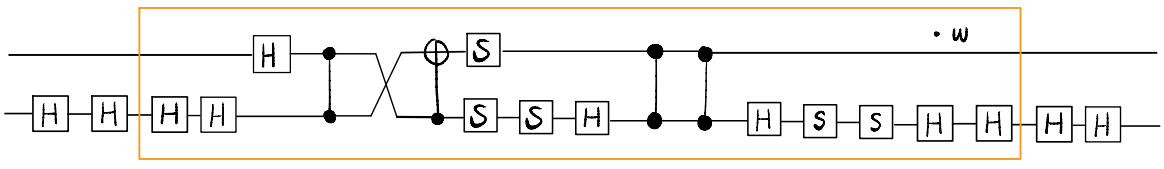
R_{10} 

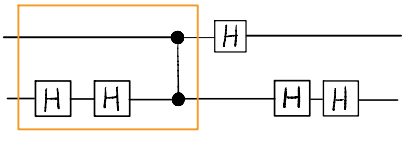
C_5 

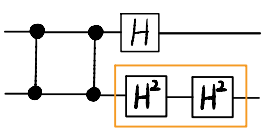
C_3 

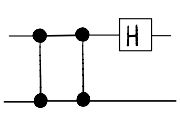
Def 1 

C_2 

R_{27}'. RHS := 

R_{27} 

C_8' 

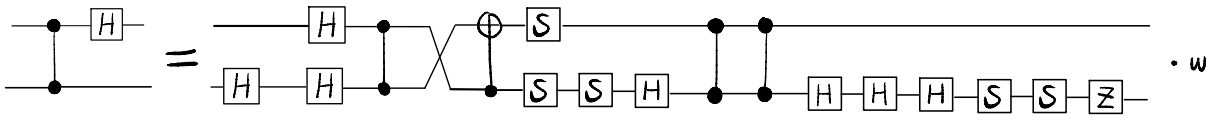
C_2 

=: R_{27}'. LHS

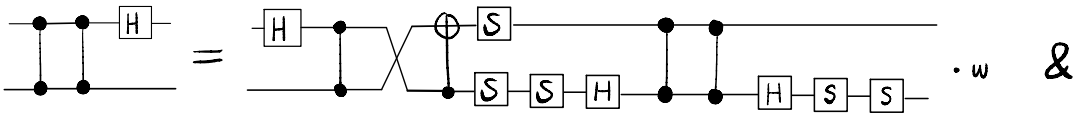
C2 : $H^4 = I$

Def 2 :

Lem Q R_{27}:

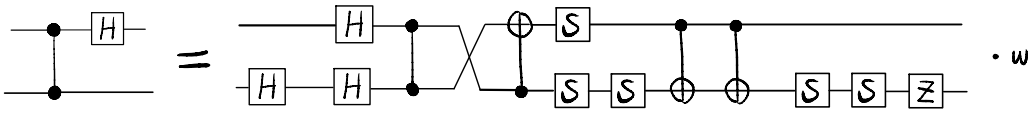


implies R_{27}^1:

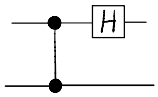


&

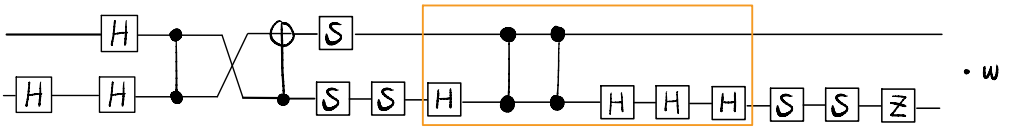
R_{27}^2:



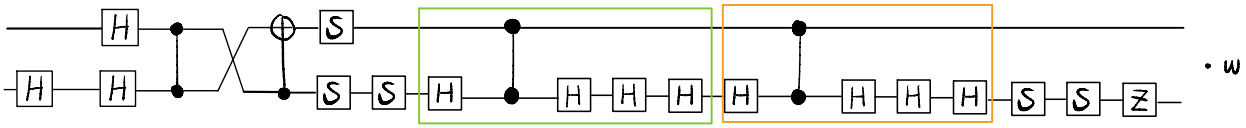
Proof Cont. R_{27}^2.LHS :=



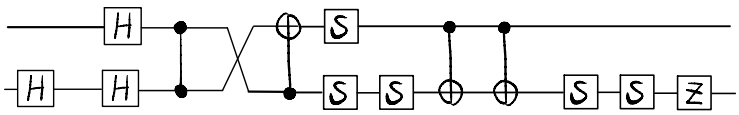
R_{27} =



C_2 =

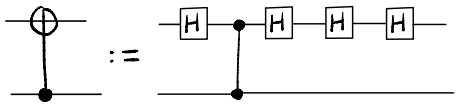


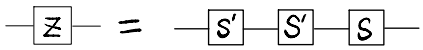
Def 2 =



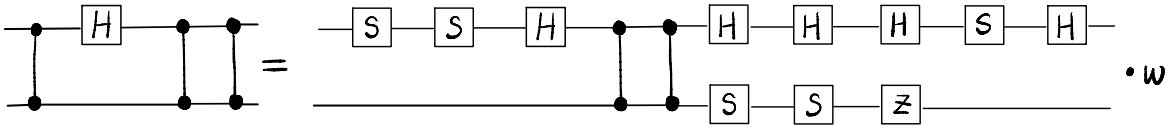
$=: R_{27}^2$.RHS

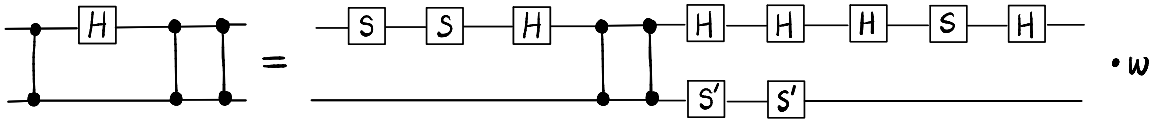
∎

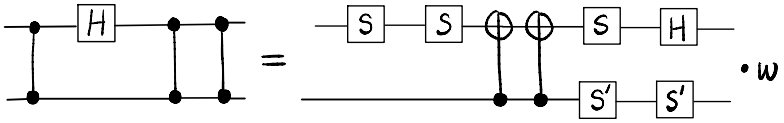
Def 2:  C2 : $H^4 = I$ C3 : $S^3 = I$

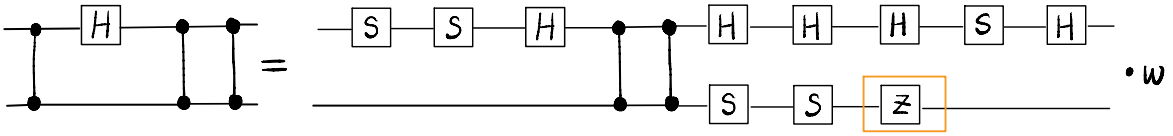
R10 : 

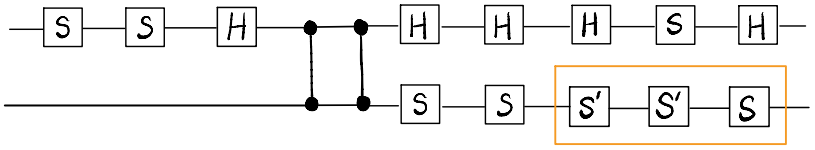
C5 : $SH^2SH^2 = H^2SH^2S$ $SS' = S'S$

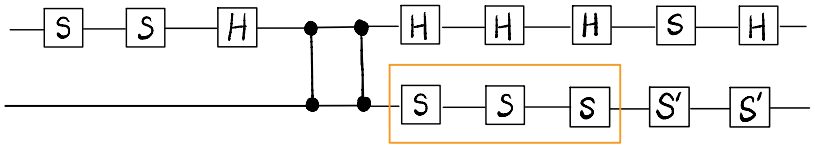
Lem R R_{28}: 

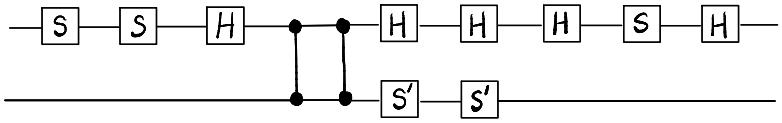
implies R'_{28} :  &

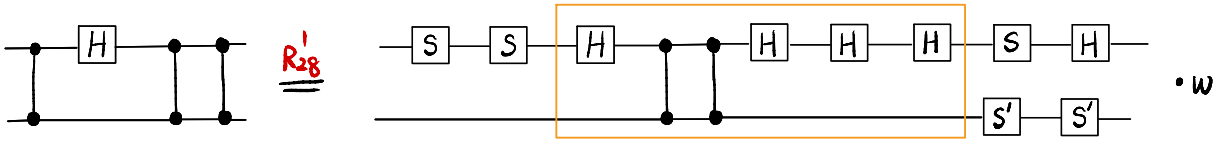
R^2_{28} : 

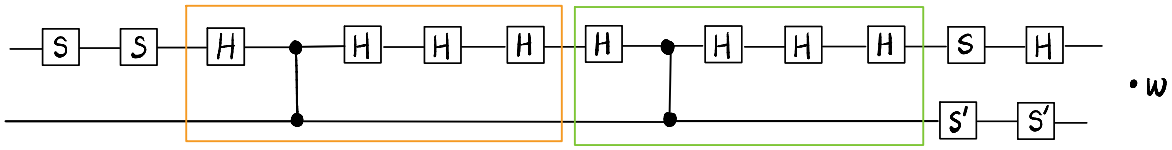
Proof: R'_{28} . LHS := 

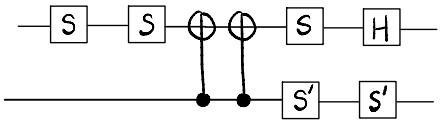
R_{10} 

C_5 

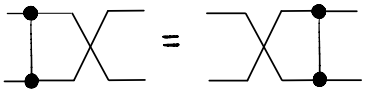
C_3  =: R'_{28} . RHS.

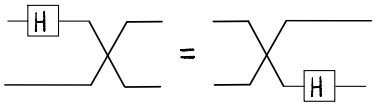
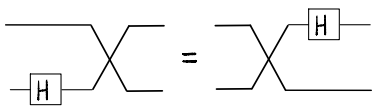
R^2_{28} . LHS := 

C_2 

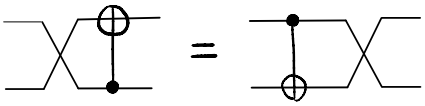
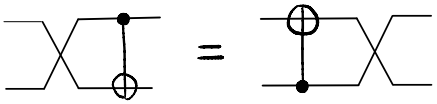
Def 2  =: R^2_{28} . RHS.

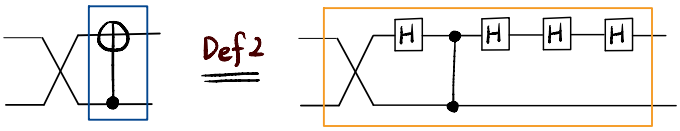
Def 2: 

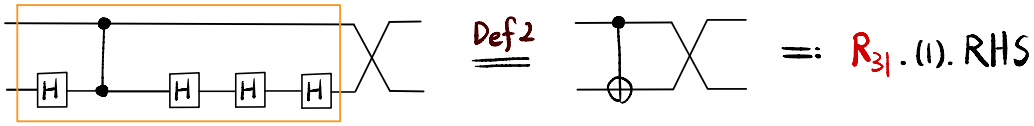
R_{17}: 

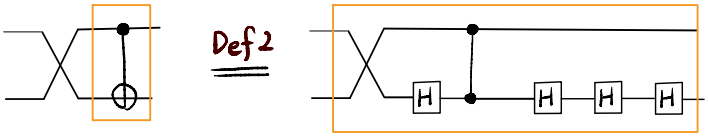
R_{19}: (1)  (2) 

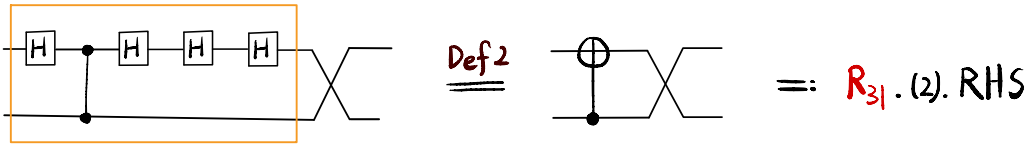
Lem T By Def 2, R_{17} & R_{19},

R_{31}: (1)  (2) 

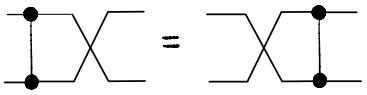
Proof: R_{31}. (1). LHS := 

R_{17}, R_{19}  =: R_{31}. (1). RHS

R_{31}. (2). LHS := 

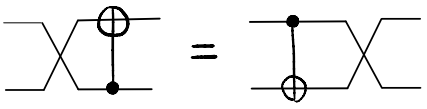
R_{17}, R_{19}  =: R_{31}. (2). RHS

C2 : $H^4 = I$ R_{17}:

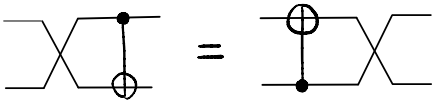


Def 2 :

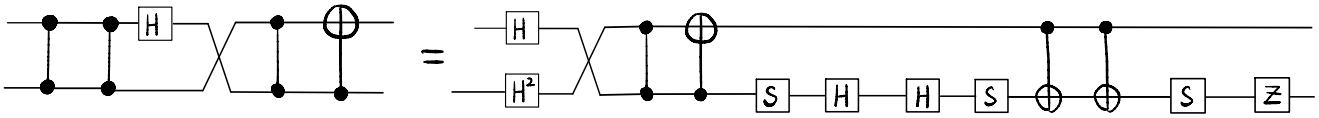
R_{31} : (1)



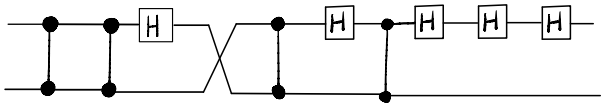
(2)

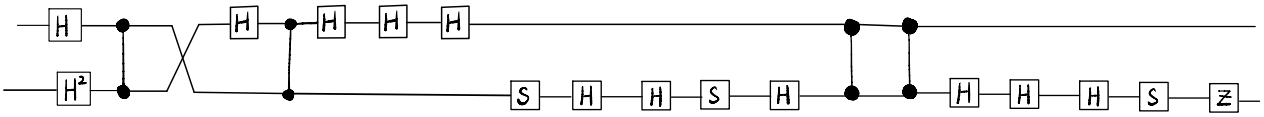


Lem U R_{30}:



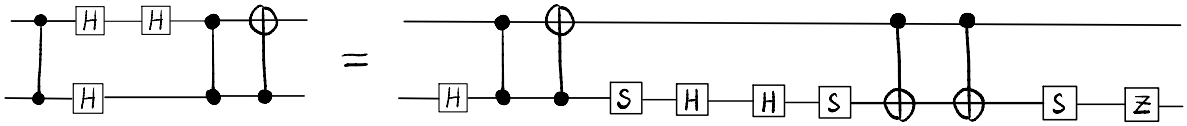
implies R'_{30}:



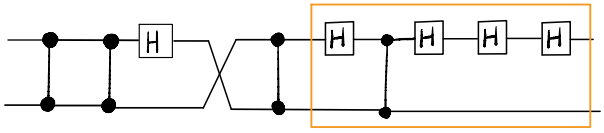


&

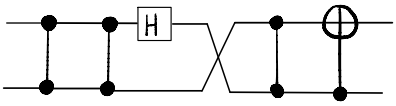
R^2_{30}:



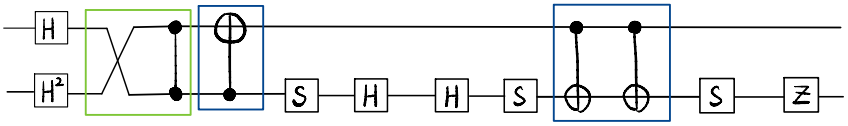
Proof: R'_{30} . LHS :=



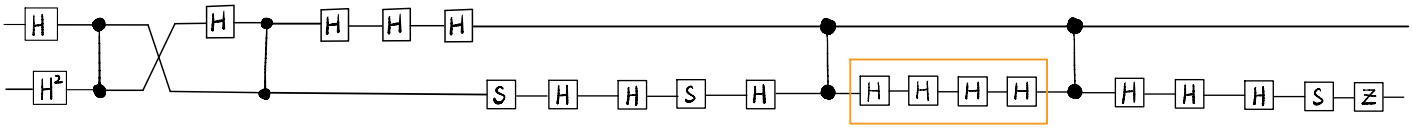
Def 2



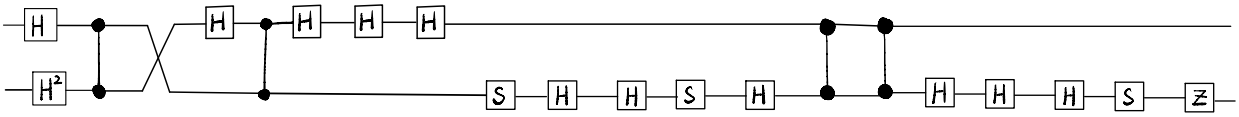
R_{30}



R_{17} / Def 2

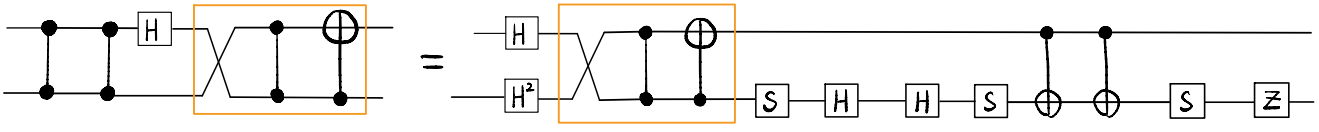


C_2



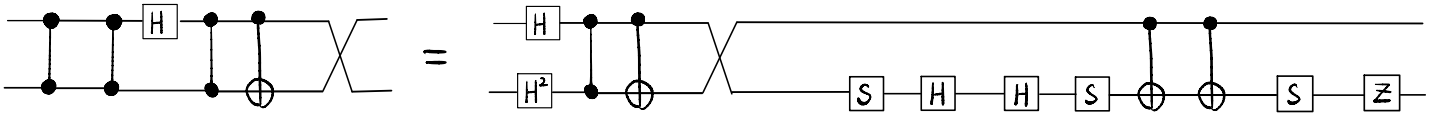
=: R'_{30} . RHS

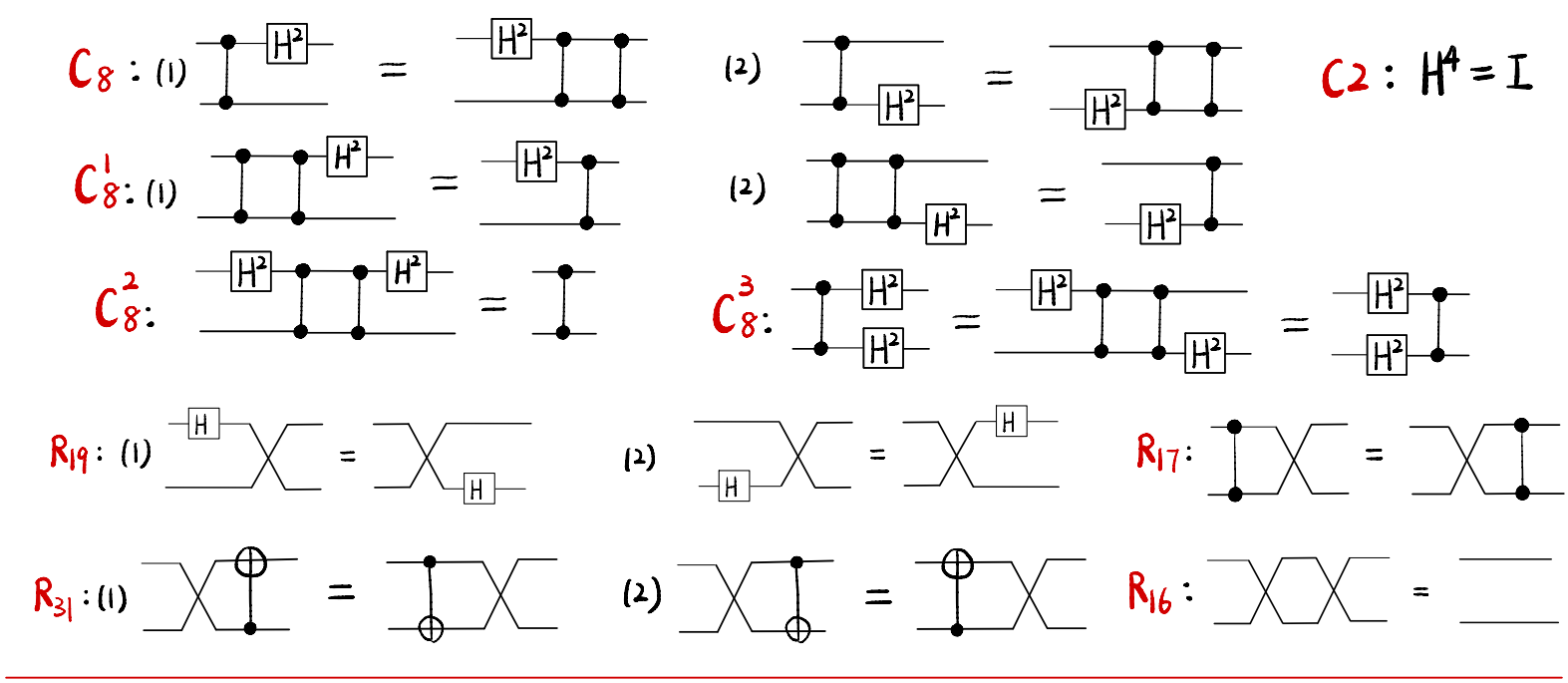
R_{30}:



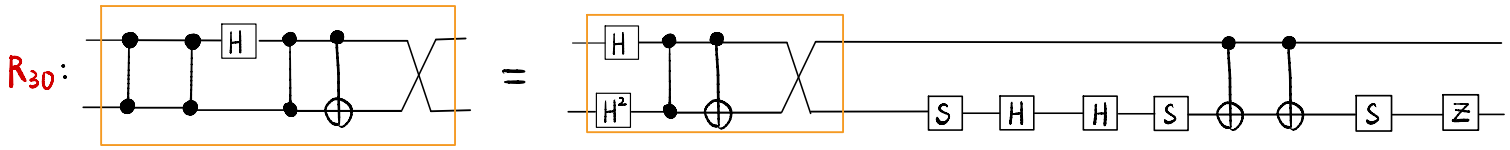
R_{17} ||| R_{31}

R_{30}:

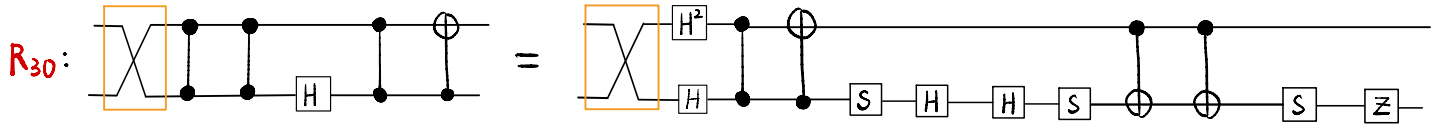




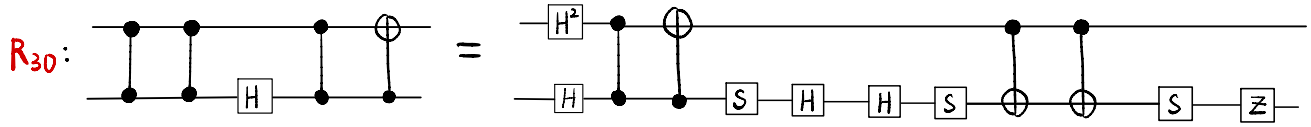
Proof Cont.



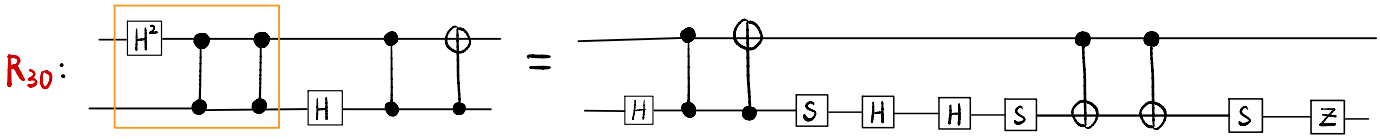
R17, R19 ||| R31



R16 ||| Appending both sides by a SWAP to the left



C2 ||| Appending both sides by an H^2 to the left



C8 |||