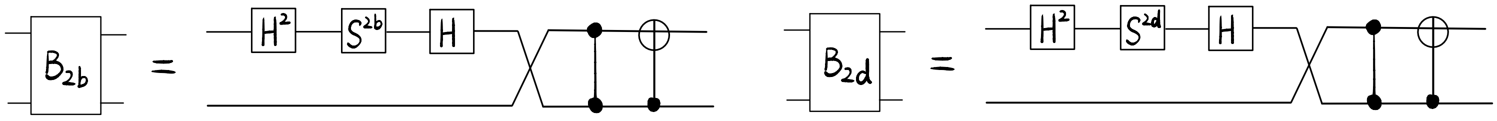
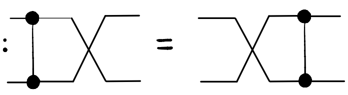
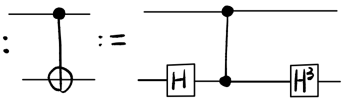
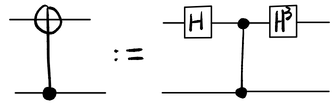
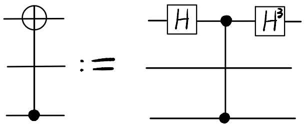
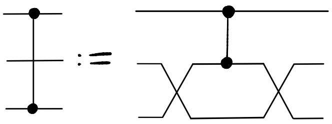


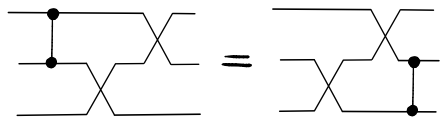
R_{17}: 

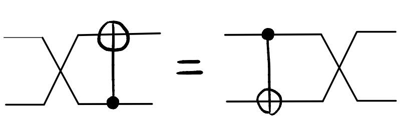
Def 4: 

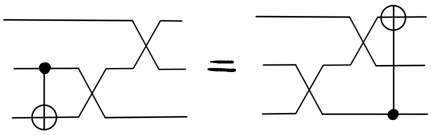
Def 2: 

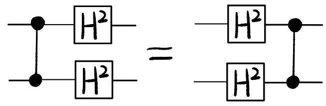
Def 7: 

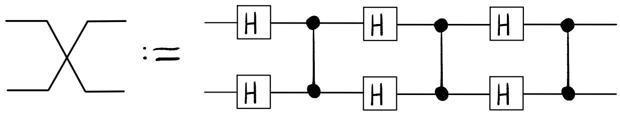
Def 5: 

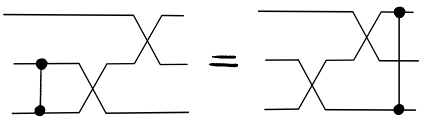
C^1_{15}: 

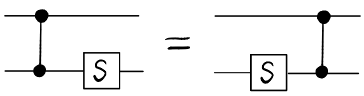
R_{31}: 

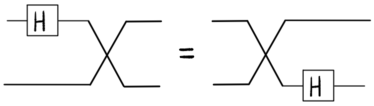
C^{14}_{15}: 

C^3_8: 

Def 3: 

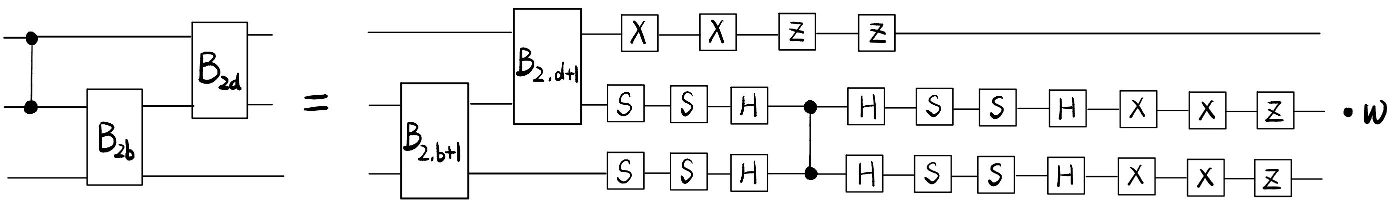
C^4_{15}: 

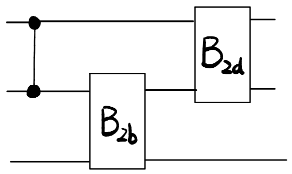
C_7: 

R_{19}: 

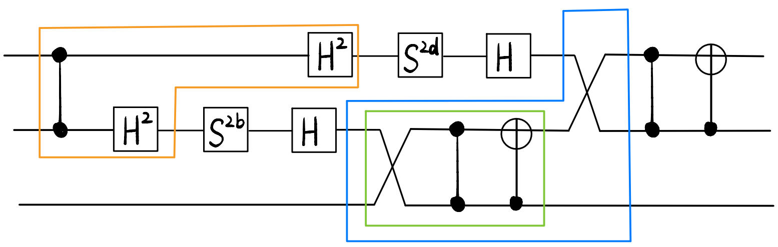
Lem 27 Def 1-5, Def 7, C_2, C_3, C_7, C_{15}, R_7, R_{10}, R_{11}, R_{16}, R_{17}, R_{18}, R_{19}, R_{31} & R_{59} imply

7.7−9.
(7)−(9)

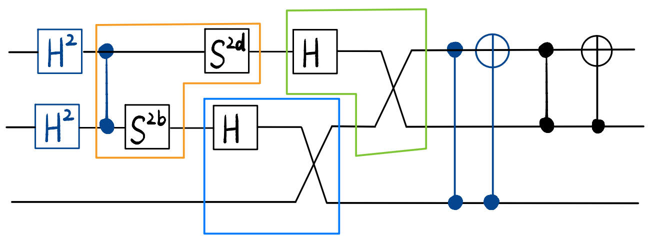


Proof: 7.7−9.(7)−(9). LHS := 

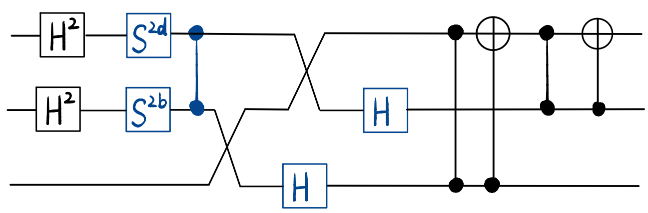
def

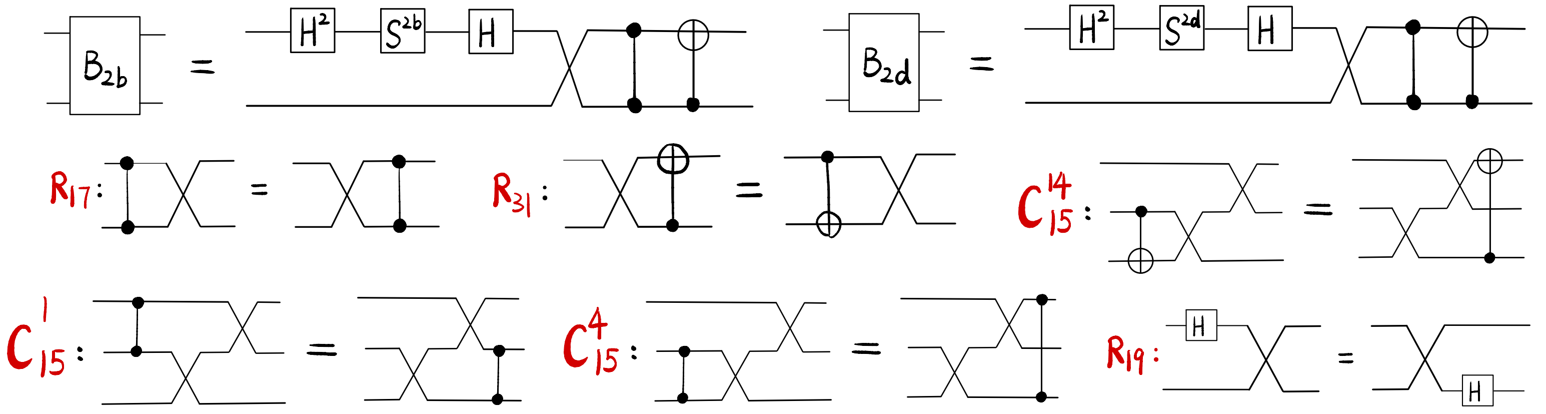


C^3_8, R_{17}, R_{31}
C^4_{15}, C^{14}_{15}



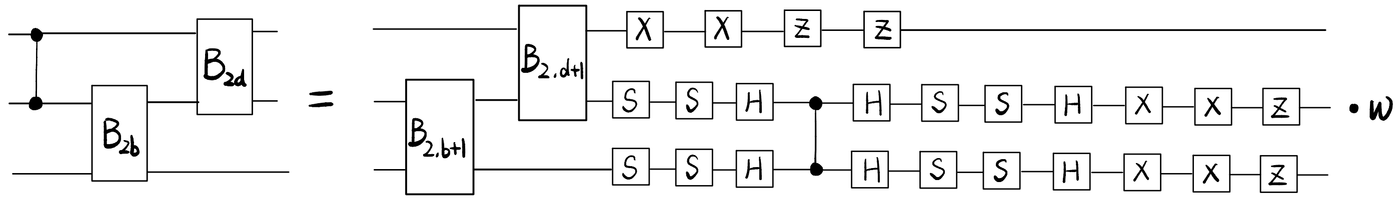
C_7
R_{19}





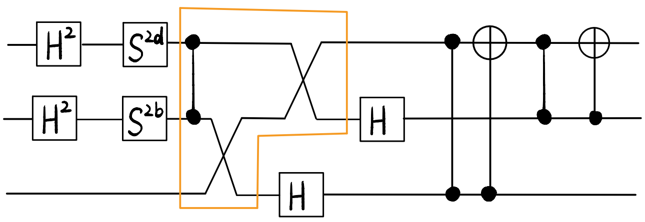
Lem 27

7.7−9. (7)−(9)

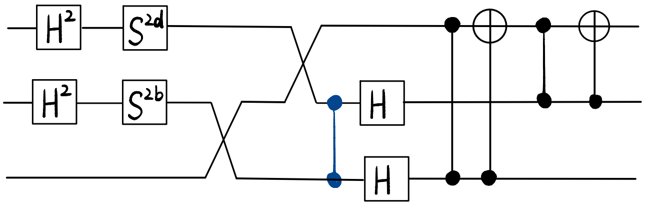


Proof cont :

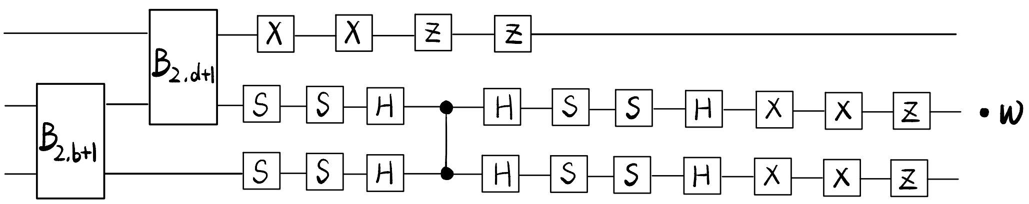
7.7−9.(7)−(9). LHS =



$\underline{\underline{C_{15}^{1}}}$

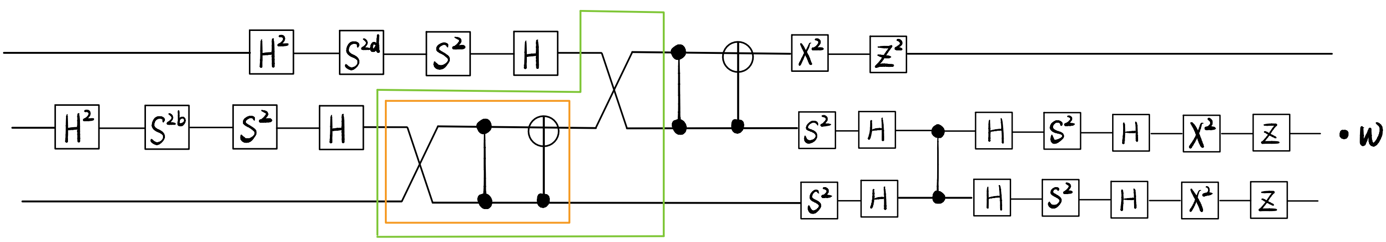


7.7−9.(7)−(9). RHS :=

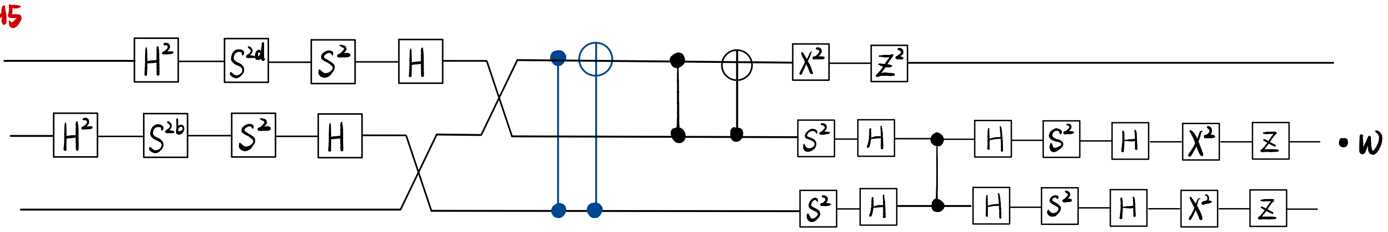


$2(b+1)=2b+2$ $2(d+1)=2d+2$

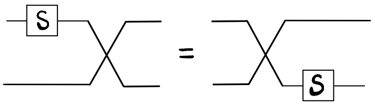
$\underline{\underline{\text{def}}}$



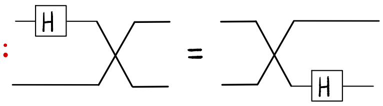
$\dfrac{R_{17}, R_{31}}{C_{15}^{4}, C_{15}^{14}}$



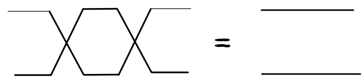
R_{18} :



R_{19} :



R_{16} :

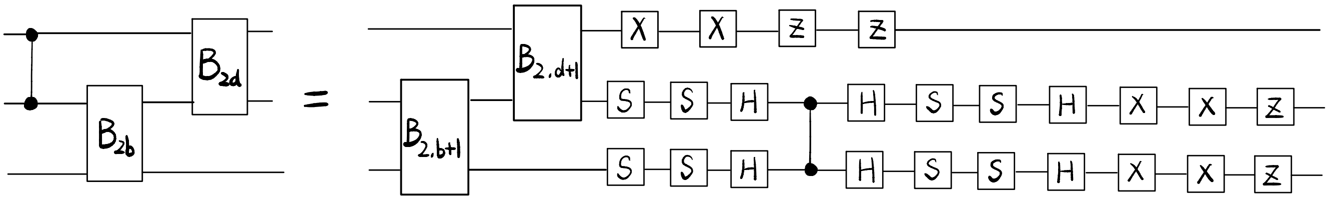


$R7$: $X^2 = H\,S\,S\,H\,H\,S\,H$ $\qquad$ $C3$: $S^3 = I$

$R10$: $Z = S'\,S'\,S$ $\qquad$ $R11$: $Z^2 = S'\,S\,S$

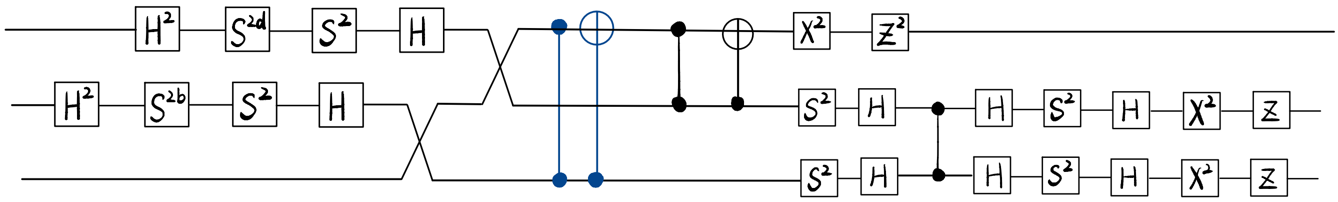
Lem 27

7.7–9.(7)–(9)



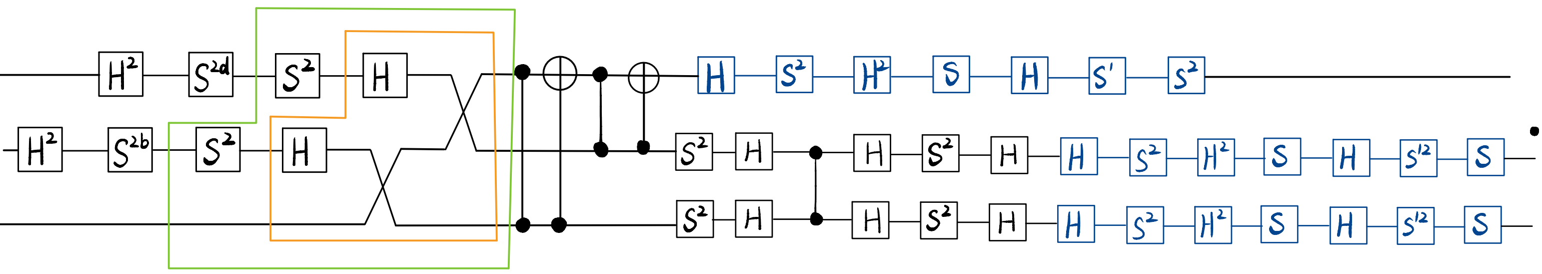
• w

Proof cont: 7.7–9.(7)–(9).RHS =



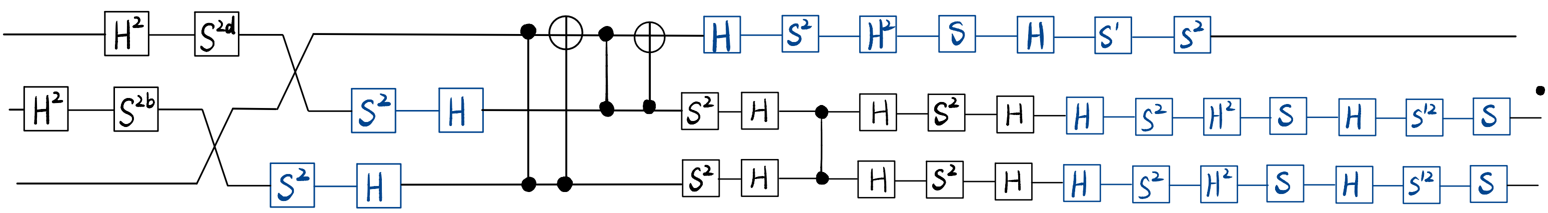
• w

$\dfrac{R_7}{R_{10}, R_{11}}$ $\qquad X^2Z^2 \underset{R_{11}}{\overset{R_7}{=\!=}} HS^2H^2SHS'S^2 \qquad X^2Z \underset{R_{10}}{\overset{R_7}{=\!=}} HS^2H^2SH\,S'^2S$



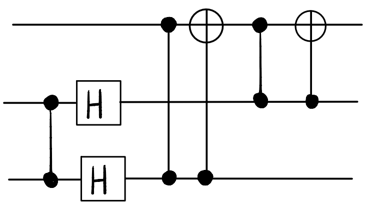
• w

$\dfrac{R_{19}}{R_{18}}$

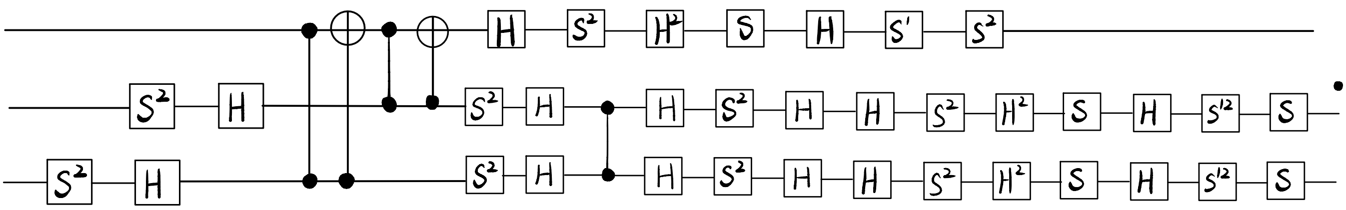


• w

Hence,

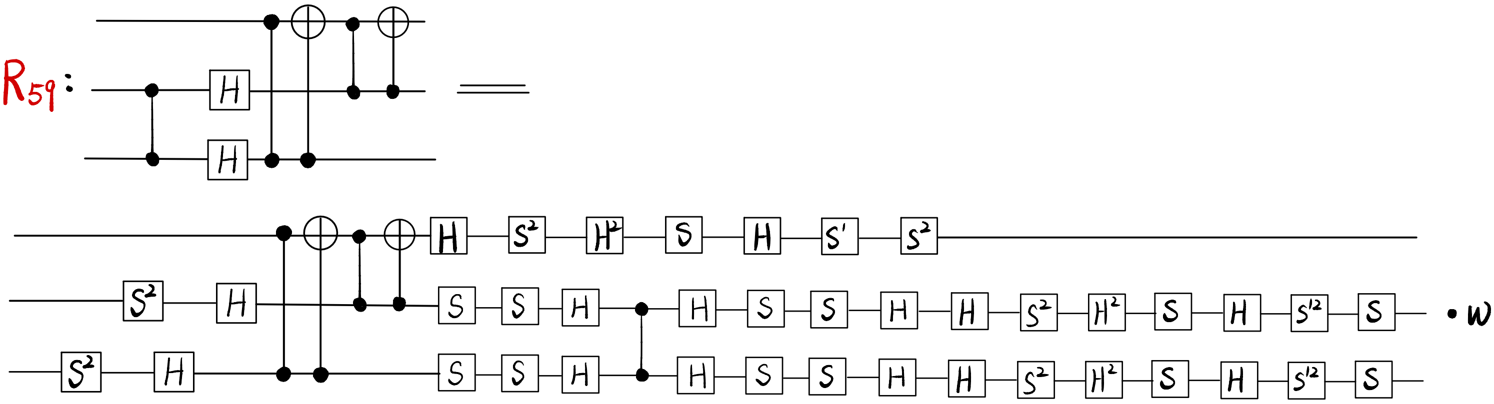


WTS



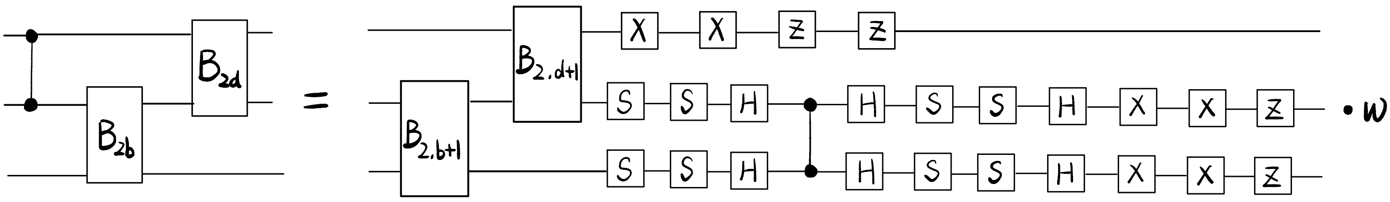
• w

R_{59}:

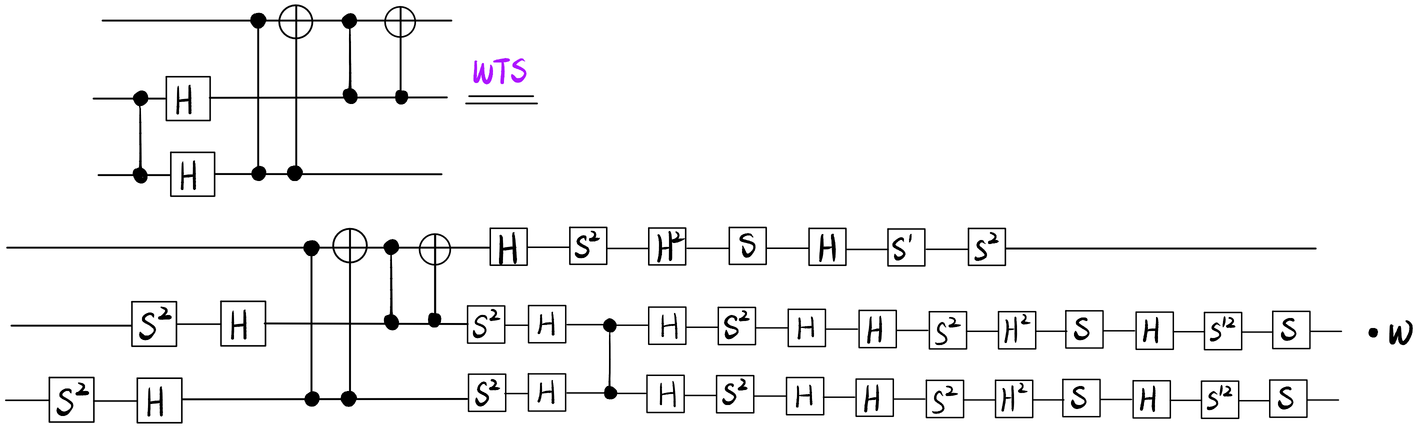


Lem 27

7.7–9.
(7)–(9)

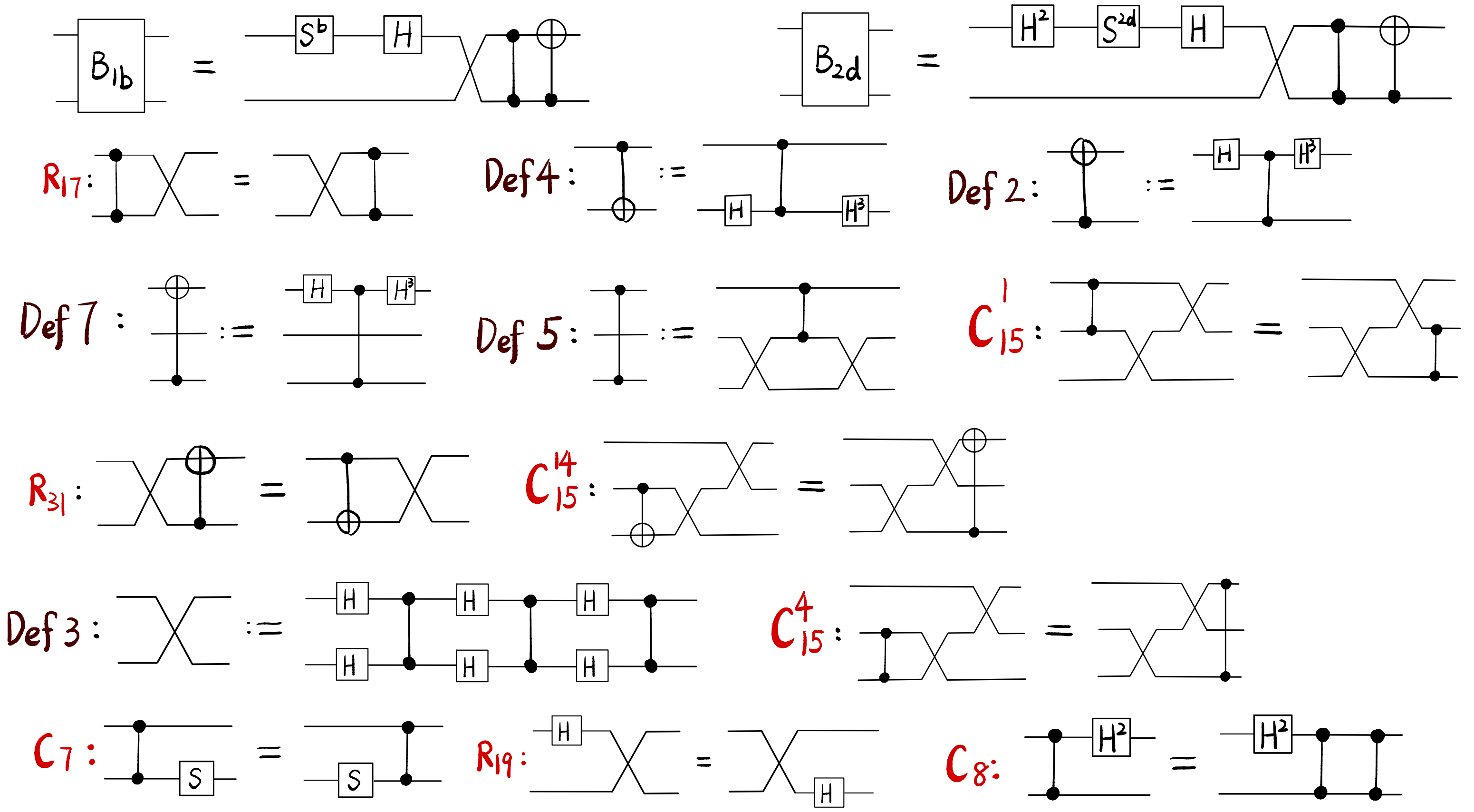


Proof cont :



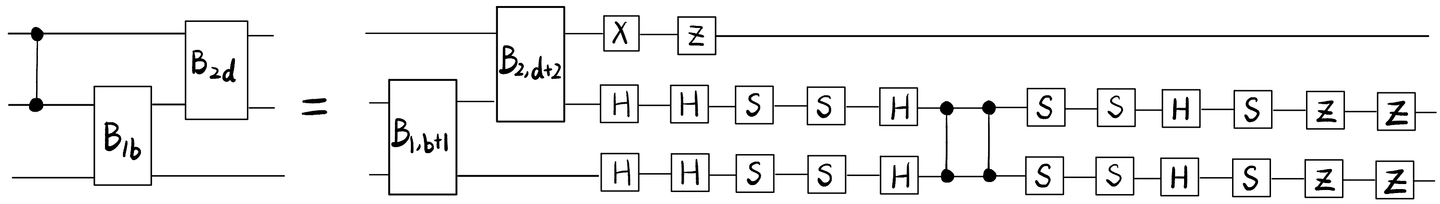
By R_{59}, this completes the proof.

∎

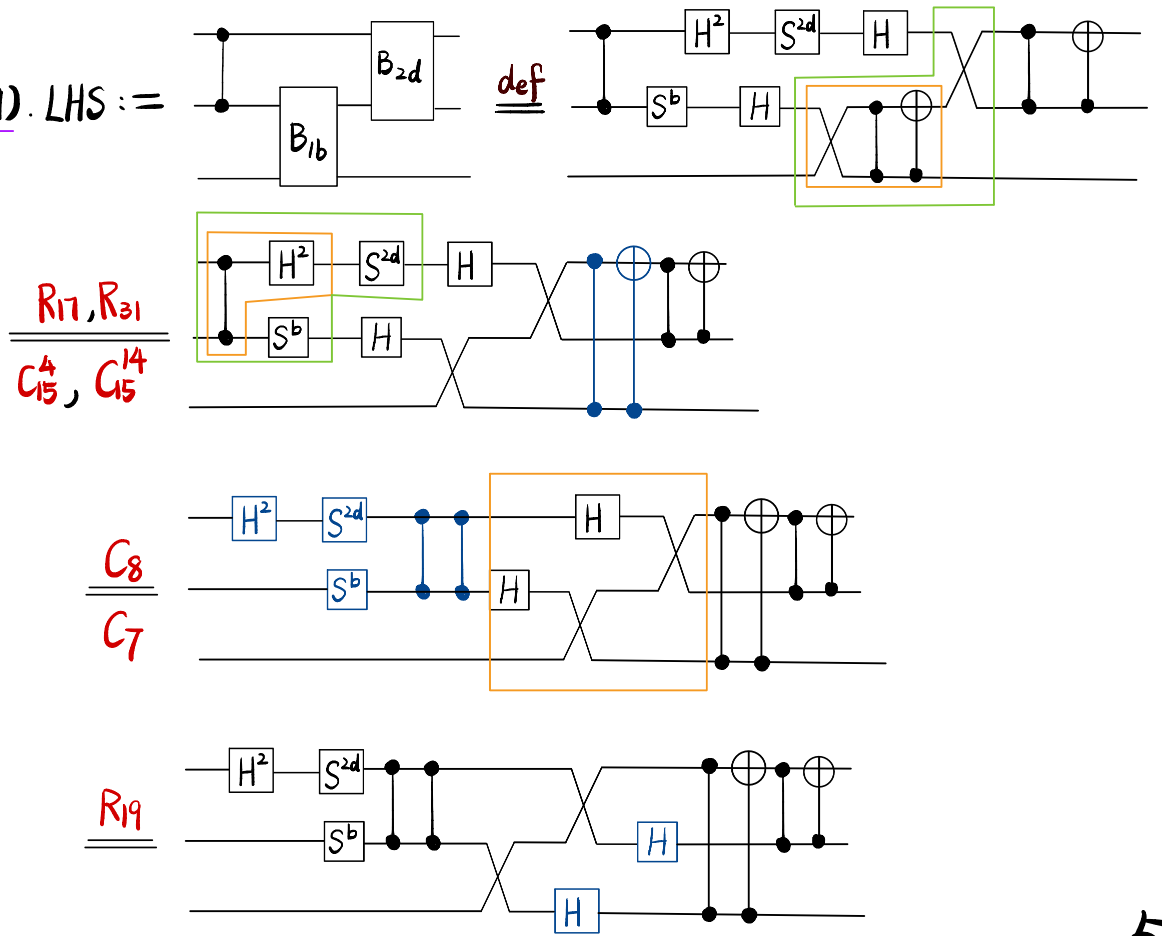


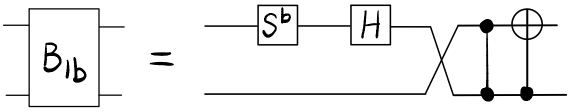
Lem 28 Def 1-5, Def 7, C_2, C_3, C_5, C_7, C_{15}, R_5, R_{10}, R_{11}, R_{16}, R_{17}, R_{18}, R_{19}, R_{31} & R_{60} imply

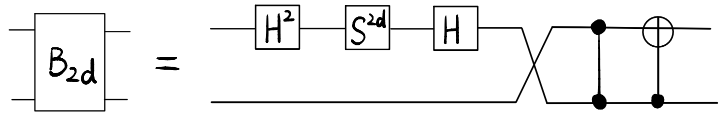
7.4-6. (7)-(9)



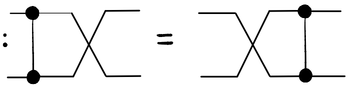
Proof: 7.4-6.(7)-(9). LHS :=



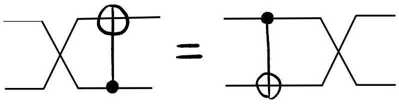




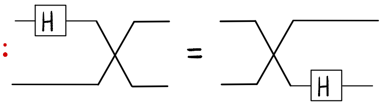
R_{17} :



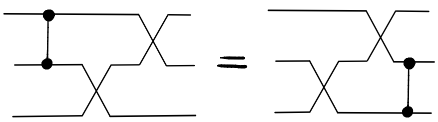
R_{31} :



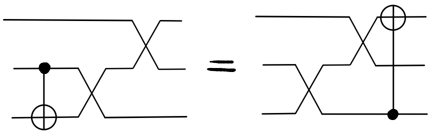
R_{19} :



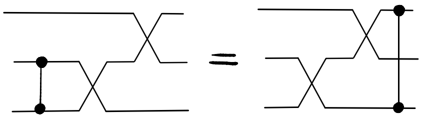
C^1_{15} :



C^{14}_{15} :

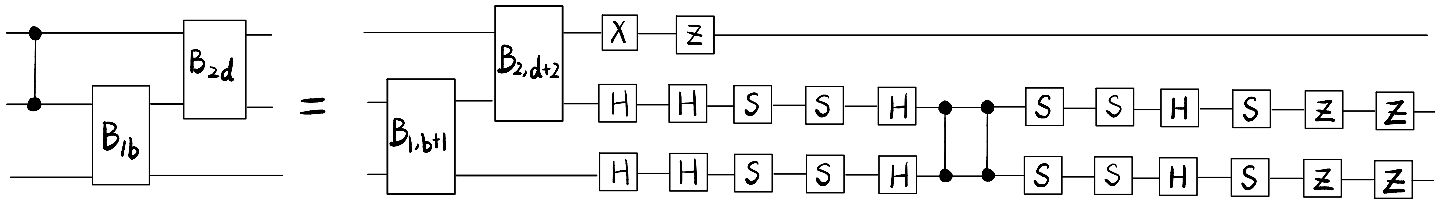


C^4_{15} :



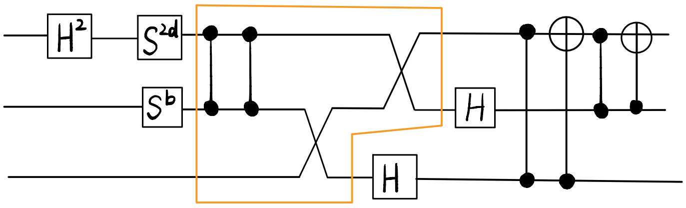
Lem 28

7.4−6. (7)−(9)

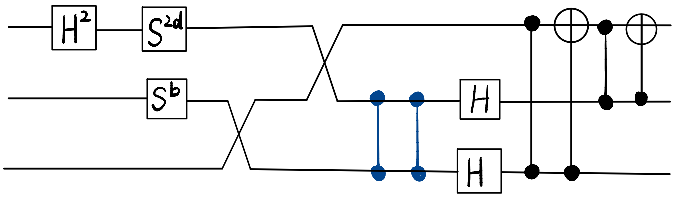


Proof cont :

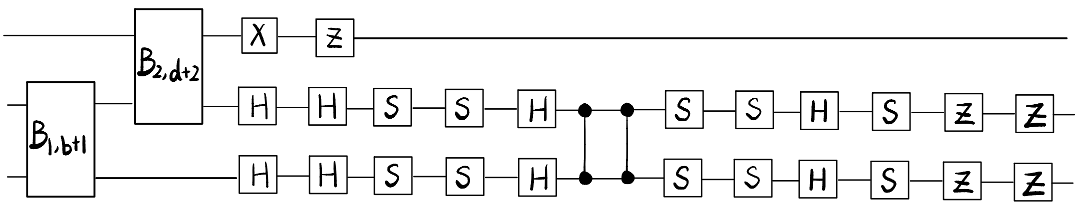
7.4−6.(7)−(9).LHS =



$\underline{\underline{C^1_{15}}}$

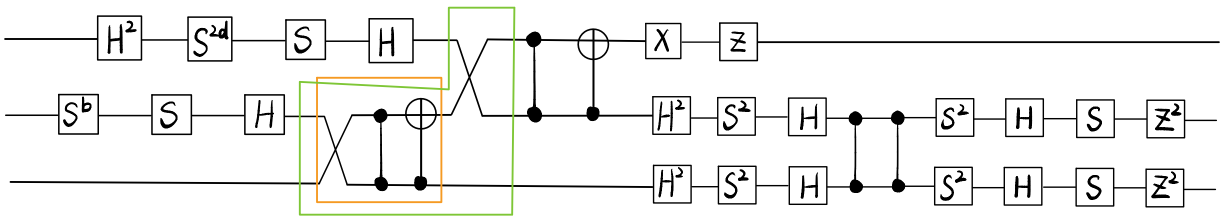


7.4−6.(7)−(9).RHS :=

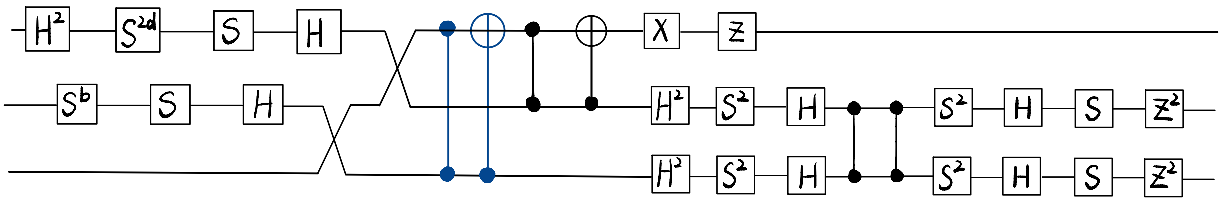


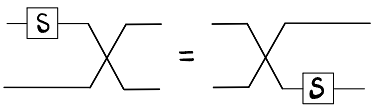
2(d+2) = 2d+1

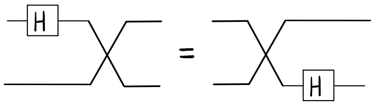
$\underline{\underline{\text{def}}}$



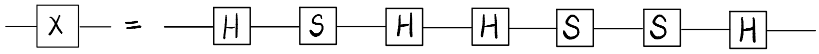
$\dfrac{R_{17}, R_{31}}{C^4_{15}, C^{14}_{15}}$

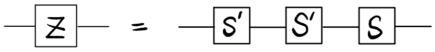


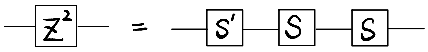
R_{18} : 

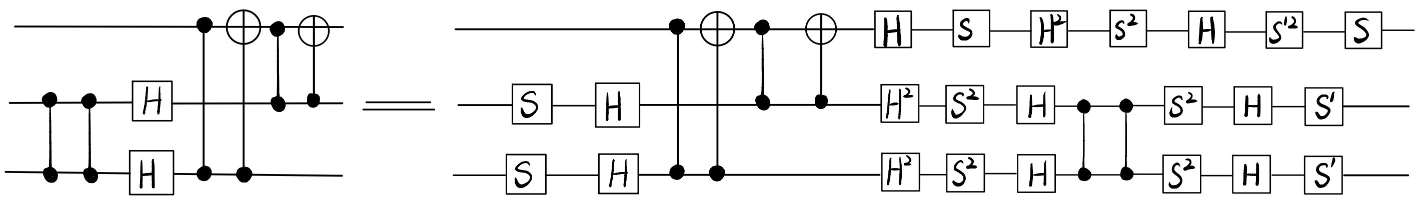
R_{19} : 

$C_3 : S^3 = I$

$R5$: 

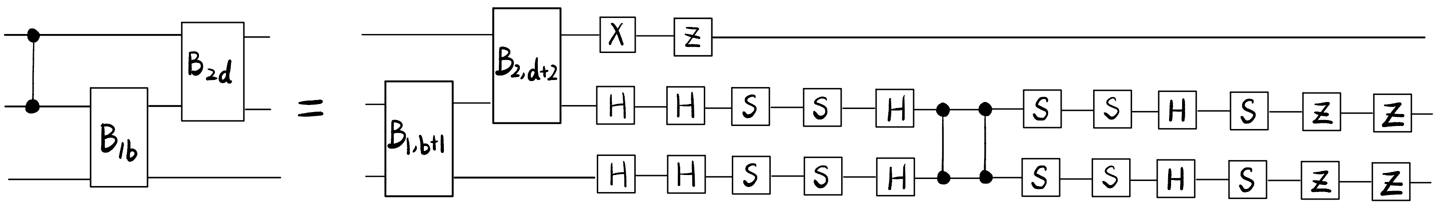
$R10$: 

$R11$: 

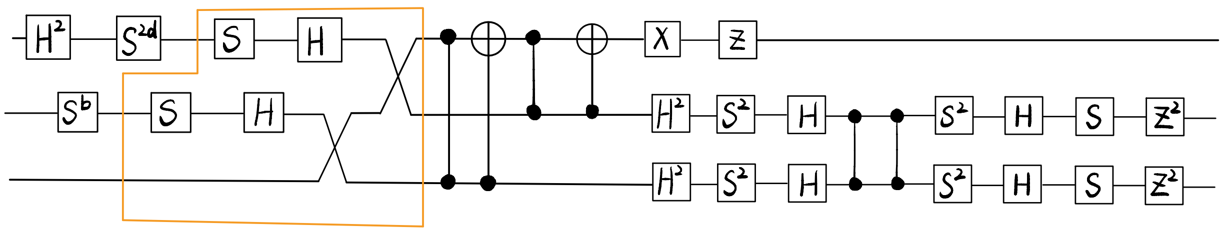
R_{60} : 

Lem 28

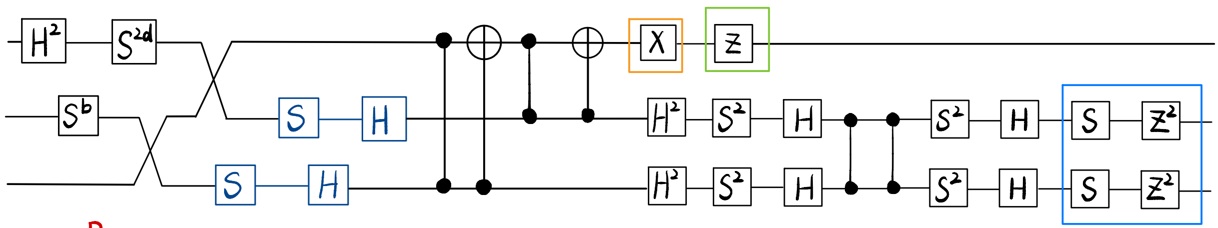
7.4−6. (7)−(9)



Proof cont : 7.4−6.(7)−(9).RHS=

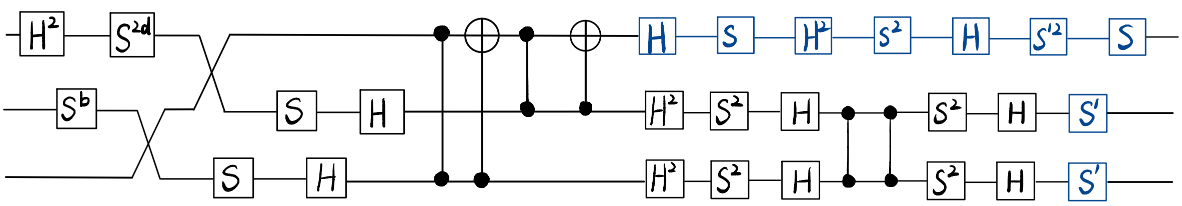


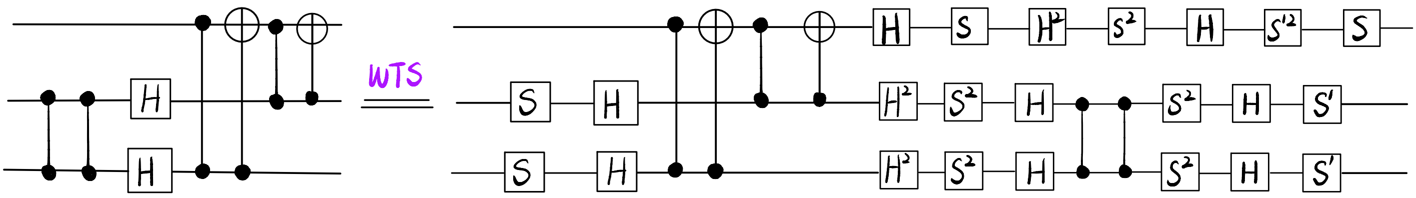
$\overline{\overline{R_{18}}}$ R_{19}



$XZ \underset{R10}{\overset{R5}{=\!=}} HSH^2S^2HS'^2S \qquad SZ^2 = SS'S^2 \underset{C_3}{\overset{C_5}{=\!=}} S'$

$\underset{R10, R11}{\overset{R5}{=\!=}}$



Hence, 

WTS

By R_{60}, this completes the proof.