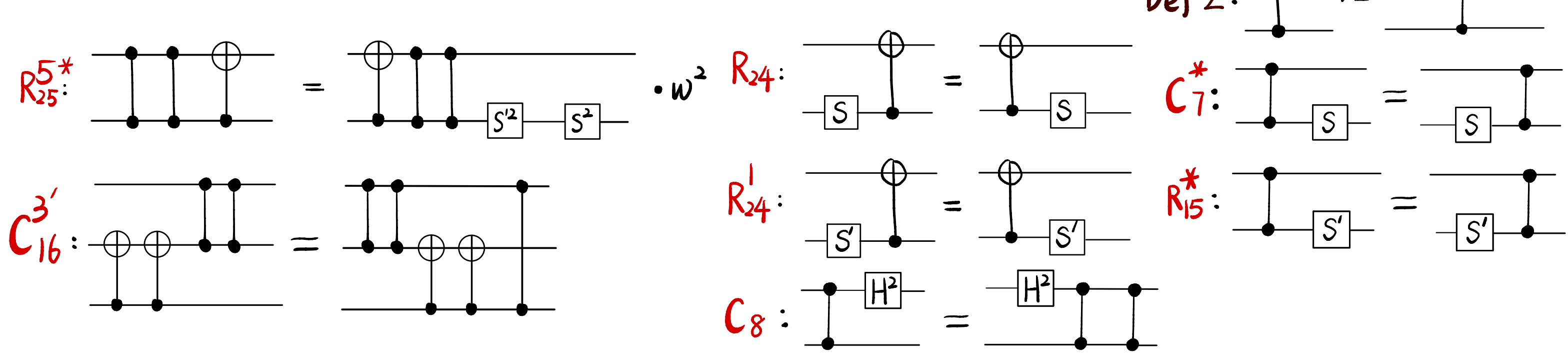
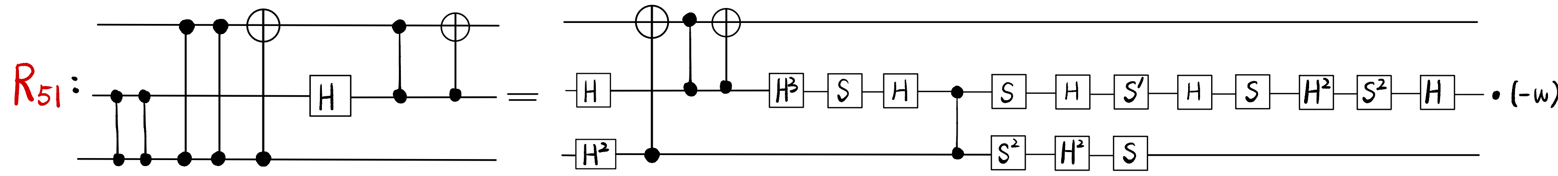
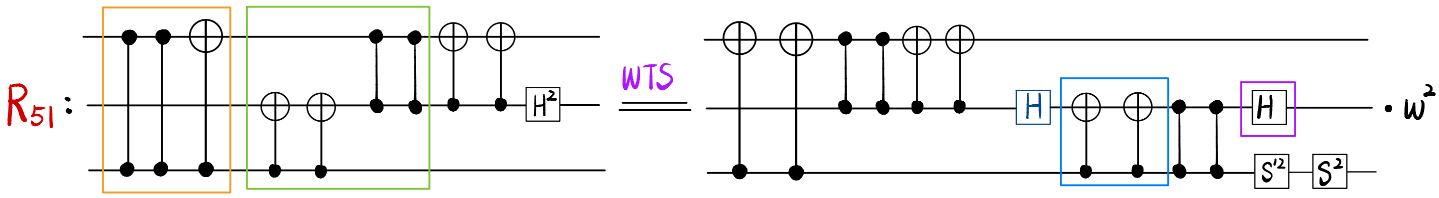
$C_0 : (-1)^2 = 1$ $C_1 : \omega^3 = 1$ $C_2 : H^4 = I$ $C_3 : S^3 = I$ $C_5 : SS' = S'S$



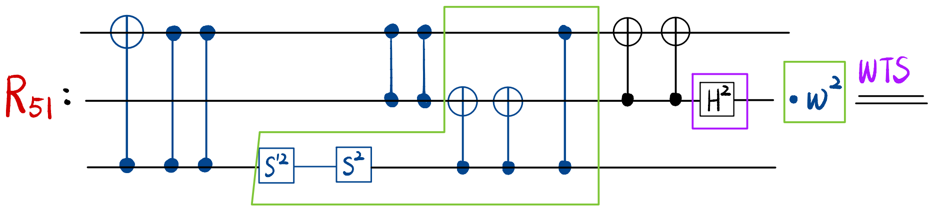
Lem Y

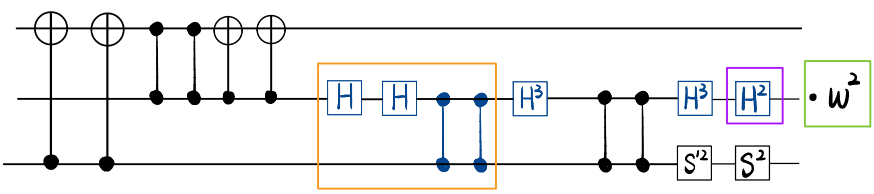


Proof cont.

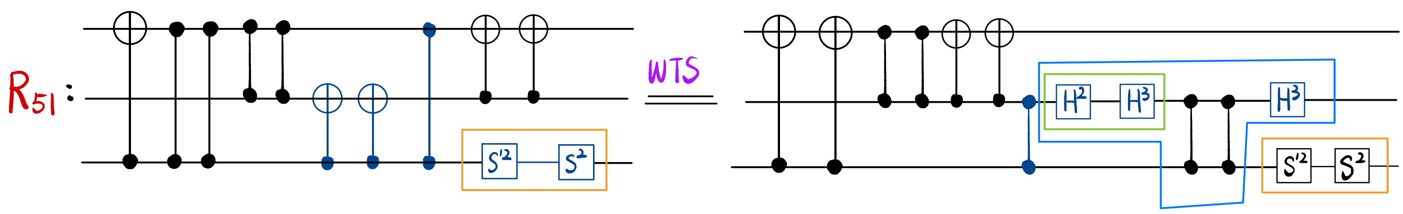


Def2, C_2 ||| R_{25}^{5*}, $C_{16}^{3'}$

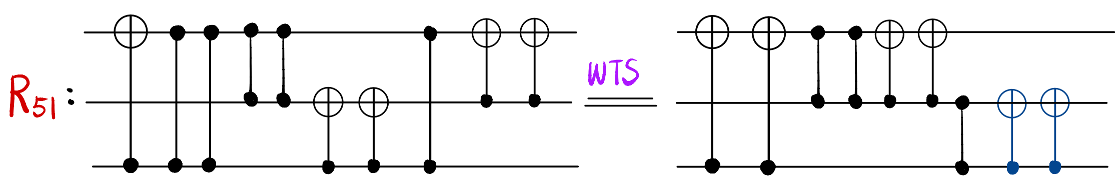




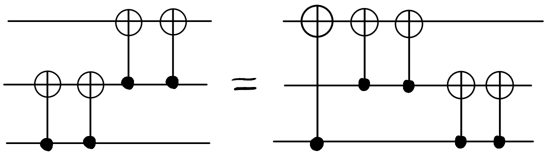
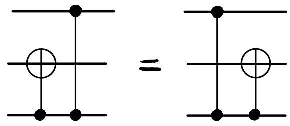
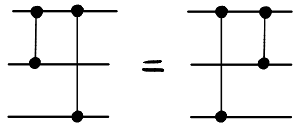
C_1, C_2 ||| R_{24}, R_{24}^{1}, C_7^*, R_{15}^*, C_8

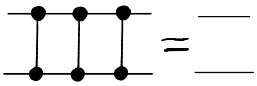
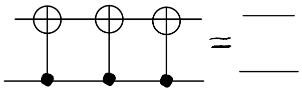
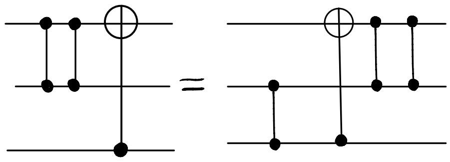


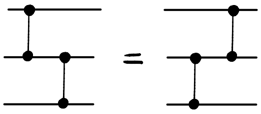
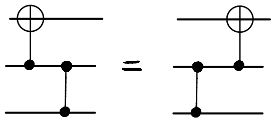
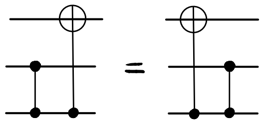
Def 1−2 ||| C_2, C_3



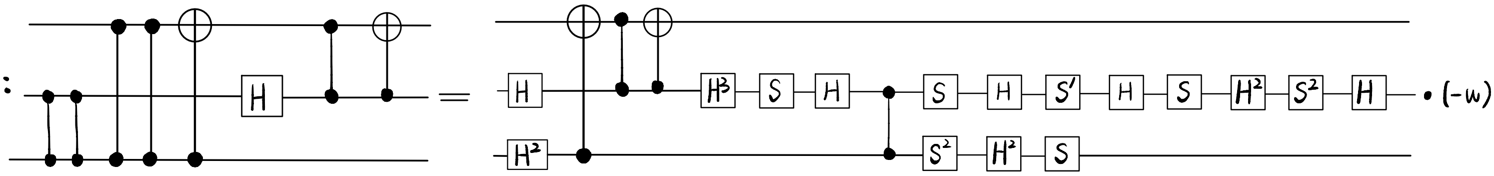
$C_0 : (-1)^2 = 1$ $C_1 : \omega^3 = 1$ $C_2 : H^4 = I$ $C_3 : S^3 = I$ $C_5 : SS' = S'S$

C_{16}^{25} :  C_{13}^{7} :  C_{13}^{1} : 

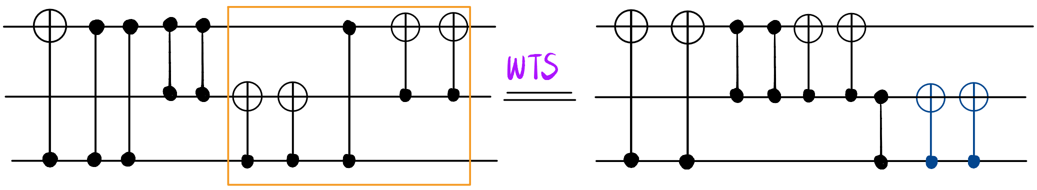
C_6 :  C_6^2 :  C_{16}^{18} : 

C_{13} :  C_{13}^{3} :  C_{13}^{8} : 

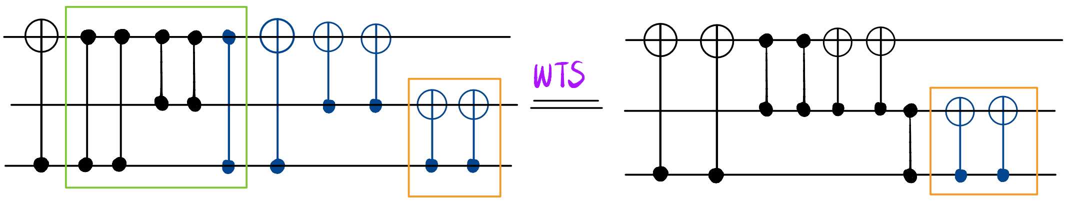
Lem Y

R_{51} : 

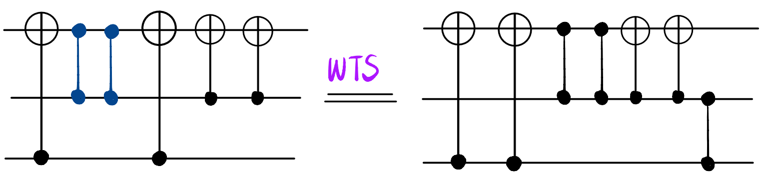
Proof cont.

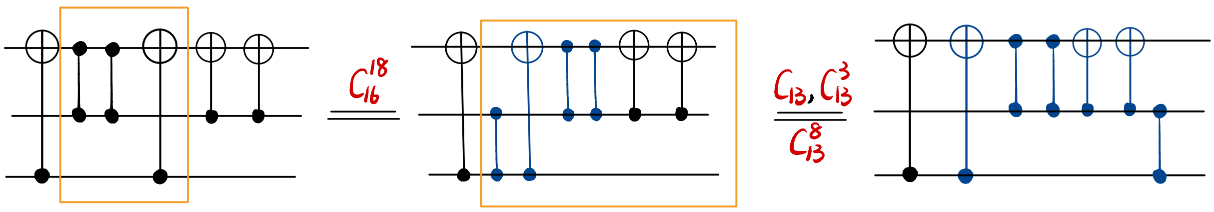
R_{51} : 

$C_{13}^{7} \;|||\; C_{16}^{25}$

R_{51} : 

$C_{13}^{1} \;|||\; C_6^{*}, C_6^{2}$

R_{51} : 

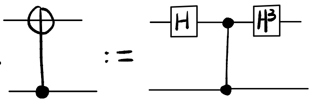
Then R_{51}.LHS := 

=: R_{51}.RHS

∎

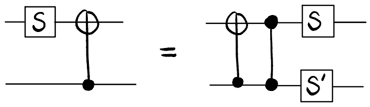
$C_0: (-1)^2 = 1$ $\quad$ $C1: \omega^3 = 1$ $\quad$ $C2: H^4 = I$ $\quad$ $C3: S^3 = I$

Def 2 :



Def 1 : $S' := H\,H\,S\,H\,H$ $\quad$ $C_5: SS' = S'S$

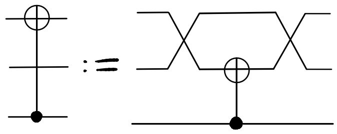
R^1_{23}:



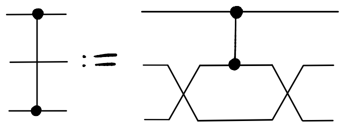
$\cdot\, \omega^2$

C_4^2: $S\,H^{+}\,S = H\,S^2\,H \cdot (-\omega^2)$

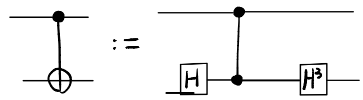
Def 7 :



Def 5 :

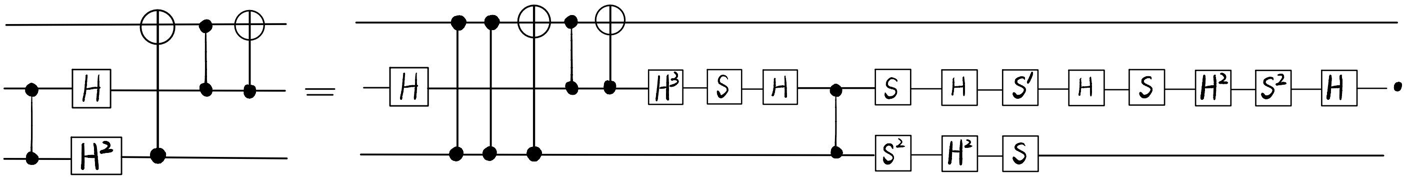


Def4 :



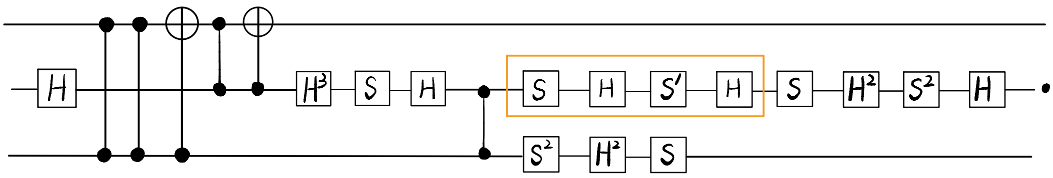
Lem Z Def 0-2, Def 4-5, Def 7, C0-8, C_{13}, C_{16}, R_{15}, R_{23}, R_{24}, R_{25} imply

R_{52}:



$\cdot\,(-\omega)$

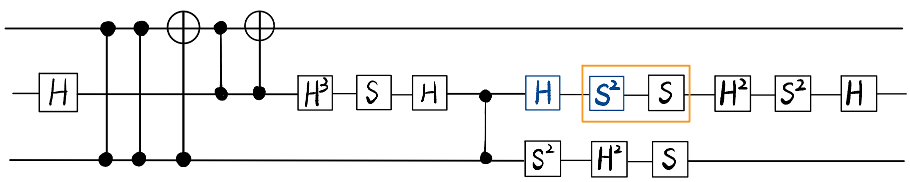
Proof: R_{52}.RHS :=



$\cdot\,(-\omega)$

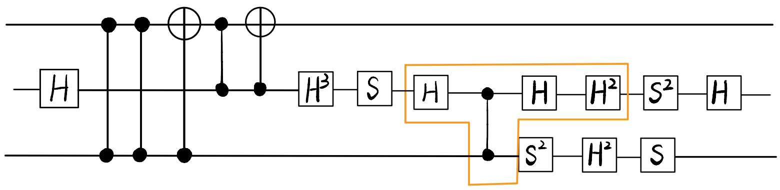
$$SH\boxed{S'}H \overset{\text{Def1}}{=\!=} \boxed{SHH^2S}\,H^2H \overset{C_4^2}{=\!=} HS^2\boxed{HH^3}\cdot(-\omega^2) \overset{C_2}{=\!=} HS^2\cdot(-\omega^2)$$

$\dfrac{\text{Def 1}}{C_2, C_4^2}$

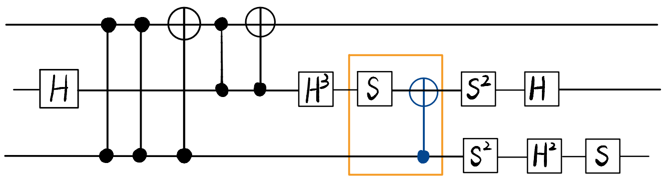


$\boxed{\cdot\,(-\omega)\cdot(-\omega^2)}$

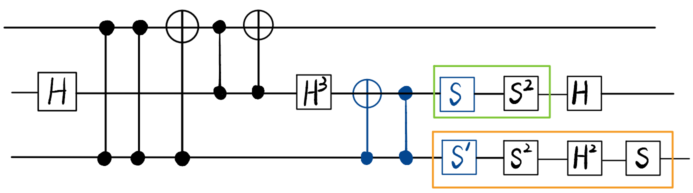
$\dfrac{C_3}{C_0, C_1}$



Def 2



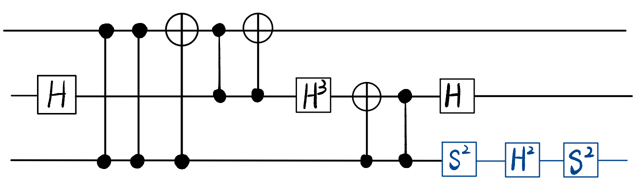
R^1_{23}



$\cdot\, \omega^2$

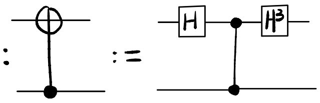
$$\boxed{S'S^2}H^2S \overset{C_5}{=\!=} S^2\boxed{S'}H^2S \overset{\text{Def1}}{=\!=} S^2H^2S\boxed{H^2H^2}S \overset{C_2}{=\!=} S^2H^2S^2$$

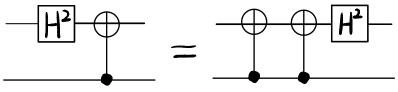
$\dfrac{\text{Def1}, C_2}{C_3, C_5}$

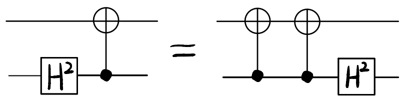


$\cdot\, \omega^2$

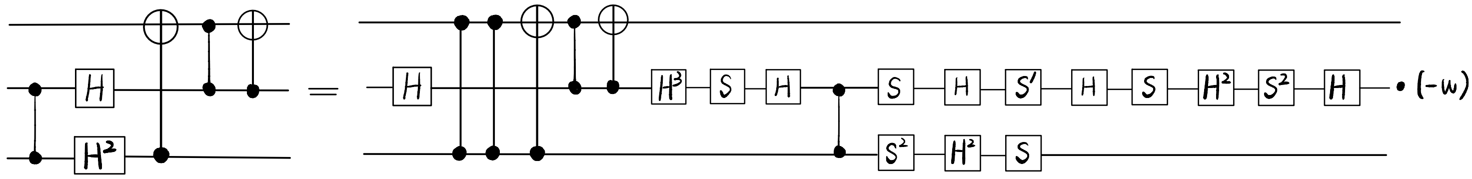
$C_0 : (-1)^2 = 1$ $\quad C1: w^3 = 1$ $\quad C2: H^4 = I$ $\quad C3: S^3 = I$

Def 2: 

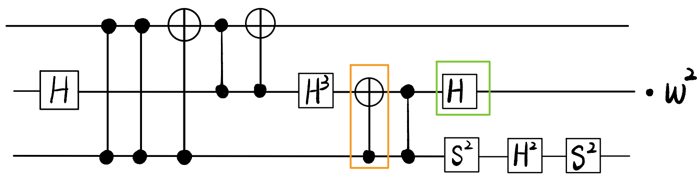
C_8^6: 

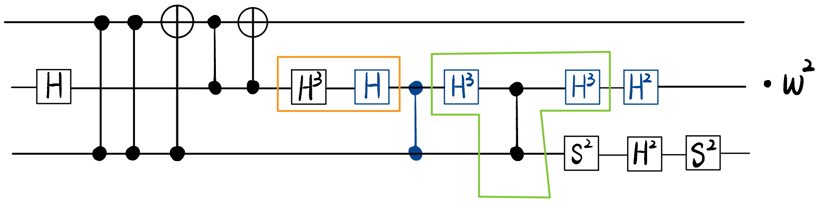
C_8^{6*}: 

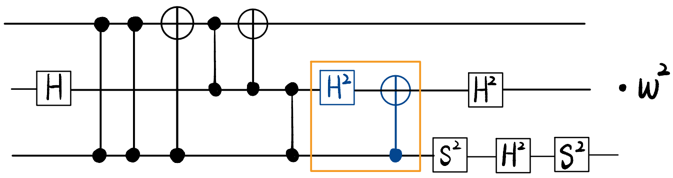
Lem Z

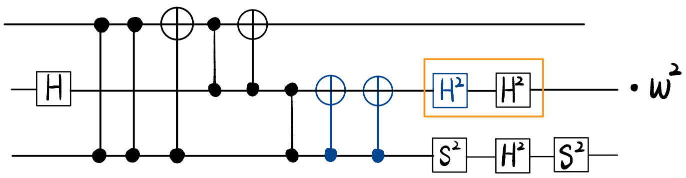
R_{52}: 

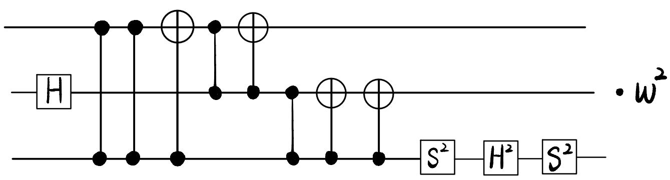
Proof cont.

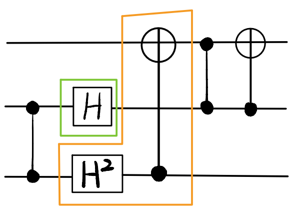
$R_{52}.\text{RHS}$ = 

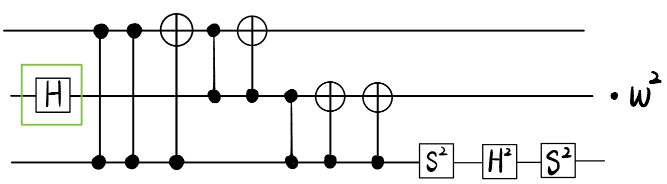
$\overline{\overline{\text{Def 2}}}$ C_2 

$\overline{\overline{\text{Def 2}}}$ C_2 

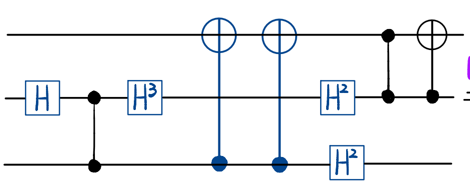
$\overline{\overline{C_8^6}}$ 

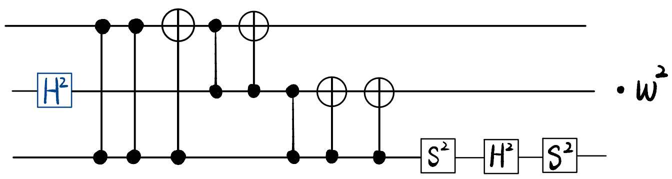
$\overline{\overline{C_2}}$ 

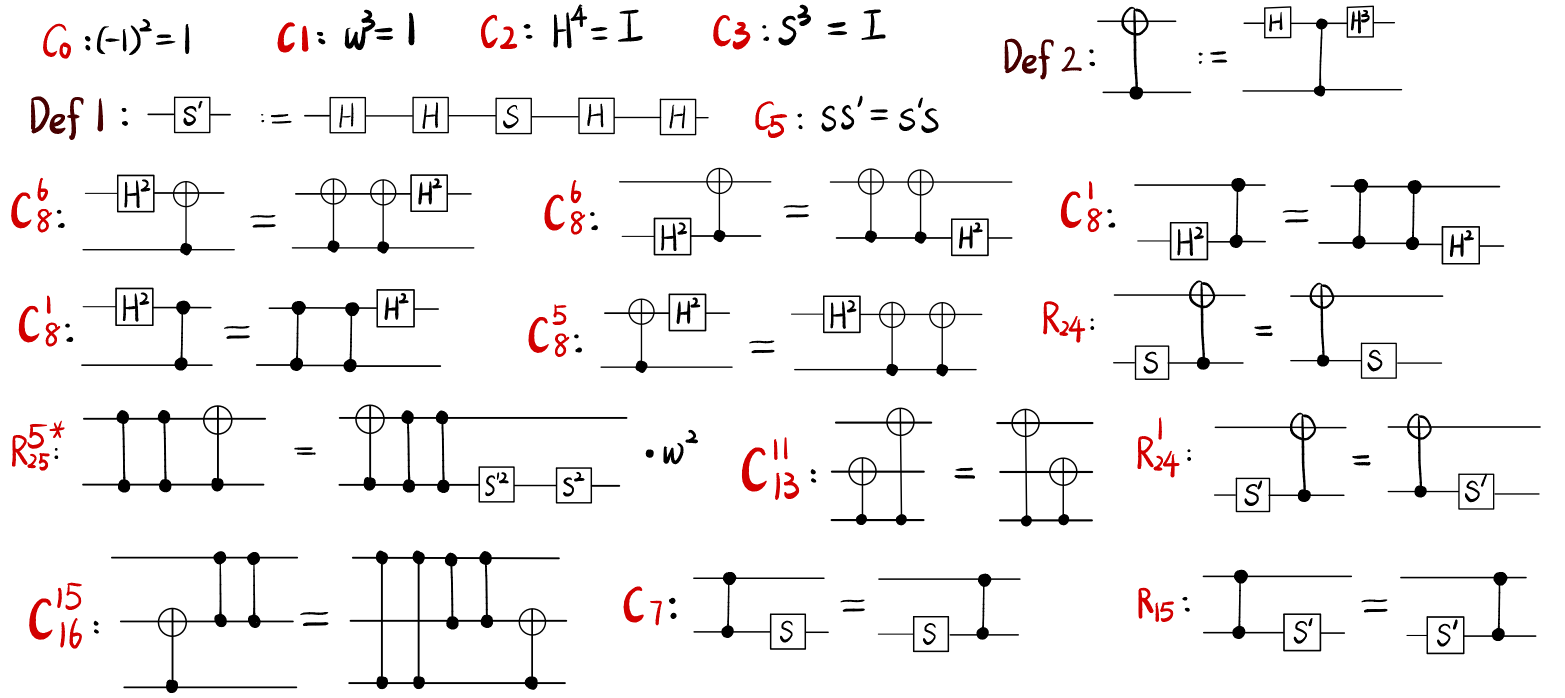
Hence R_{52}: 

$\overset{\text{WTS}}{=\!=}$ 

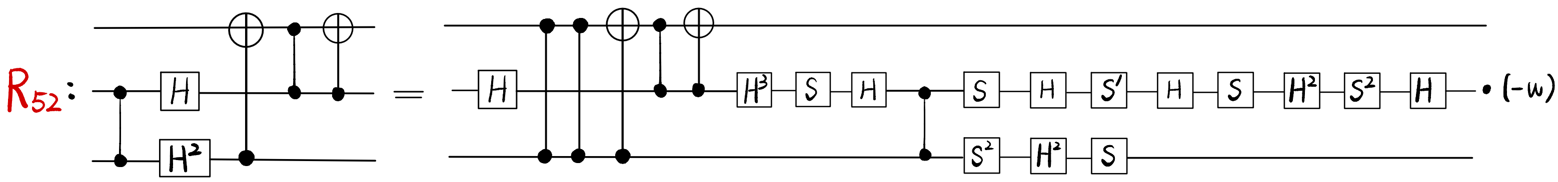
C_8^{6*} ||| C_2

R_{52}: 

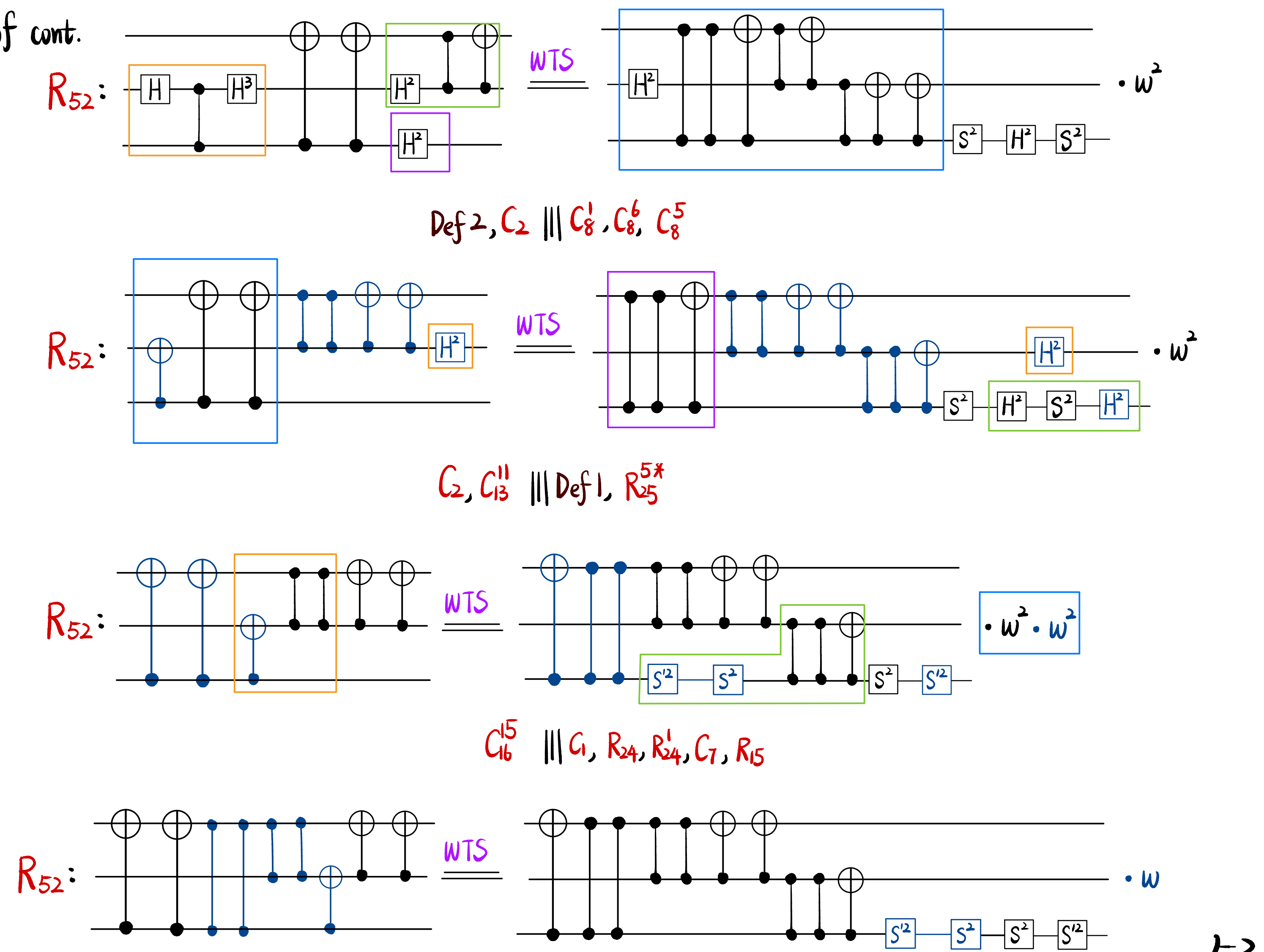
$\overset{\text{WTS}}{=\!=}$ 



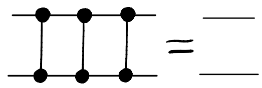
Lem Z



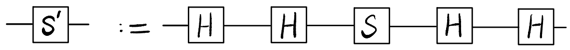
Proof cont.



$C_0 : (-1)^2 = 1$ $C1 : w^3 = 1$ $C_2 : H^4 = I$ $C_3 : S^3 = I$ C_6^*:

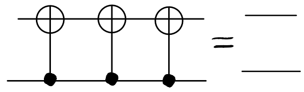


Def 1 :

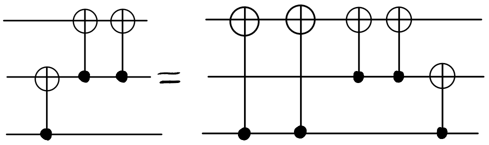


$C_5 : SS' = S'S$

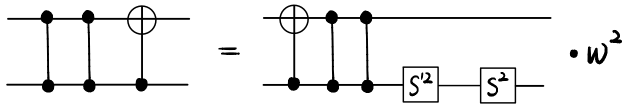
C_6^{2*}:



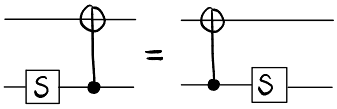
C_{16}^{26}:



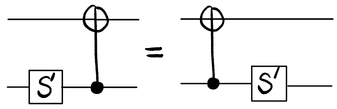
R_{25}^{5*}:



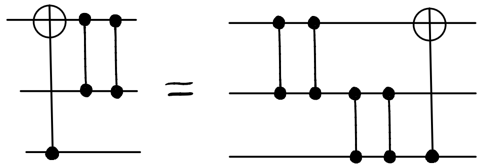
R_{24}^*:



R_{24}^{1*}:

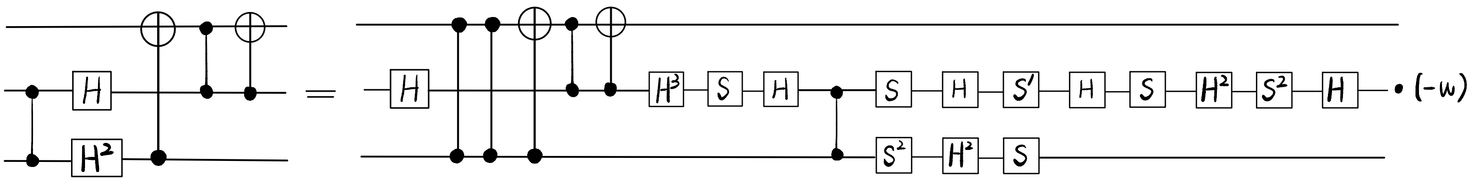


C_{16}^{16}:



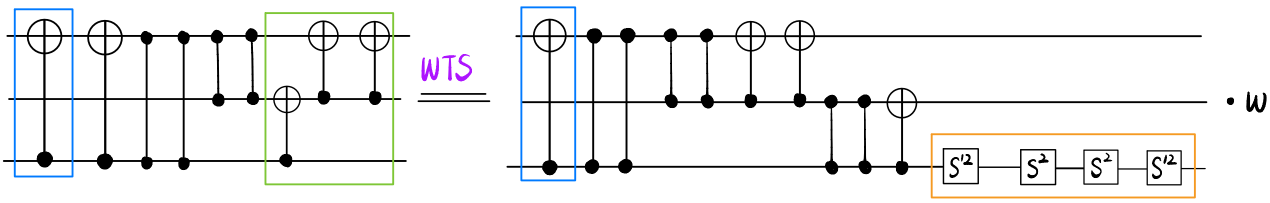
Lem Z

R_{52}:



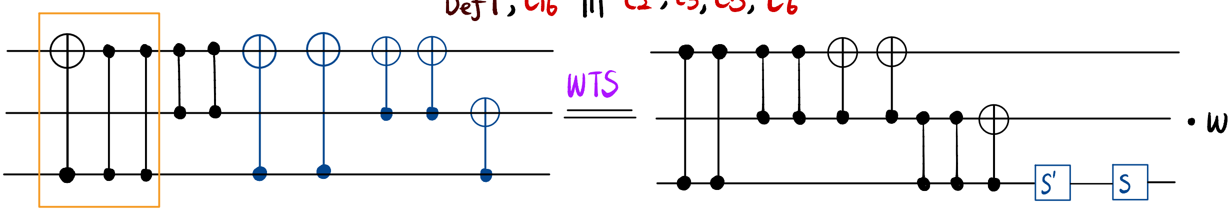
Proof cont.

R_{52}:



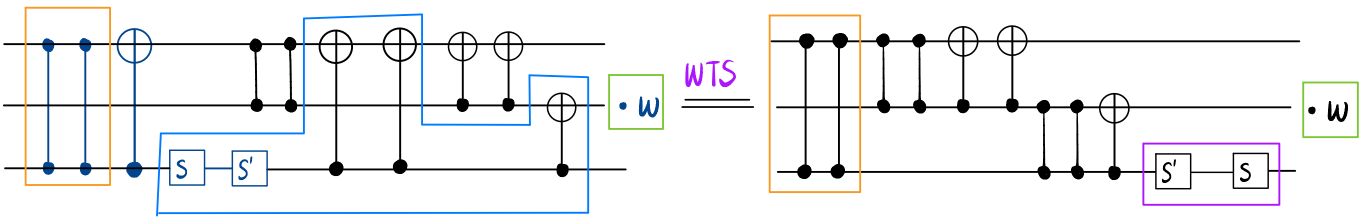
Def 1, C_{16}^{26} ||| C_2, C_3, C_5, C_6^{2*}

R_{52}:



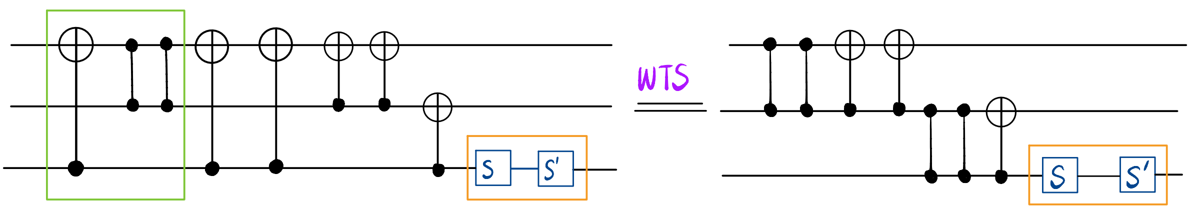
Def 1, C_1, C_2, C_3 ||| R_{25}^{5*}

R_{52}:



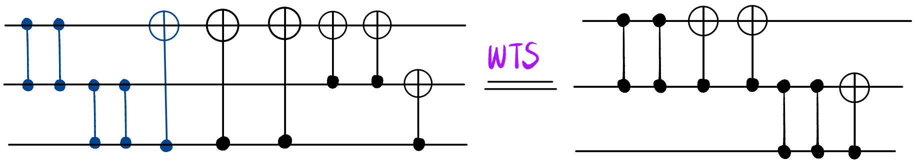
C_1, C_5, C_6^* ||| R_{24}^*, R_{24}^{1*}

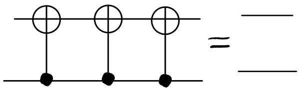
R_{52}:

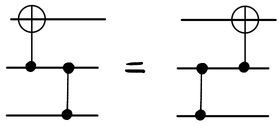


Def 1, C_2, C_3 ||| C_{16}^{16}

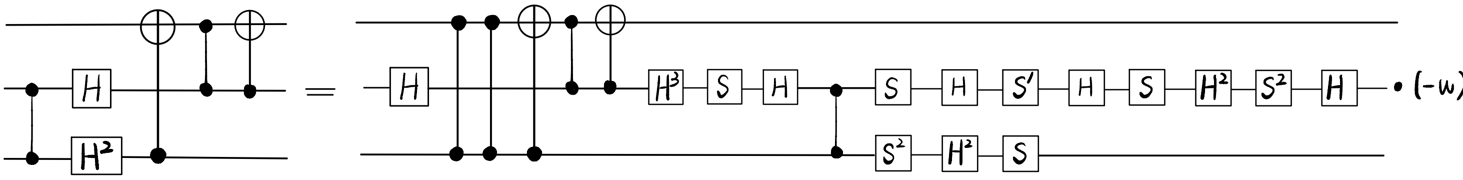
R_{52}:



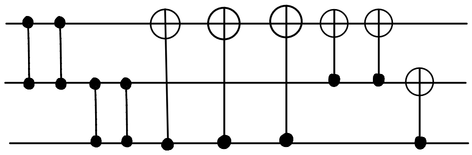
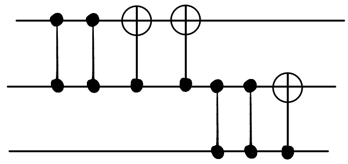
C_6^{2*}: 

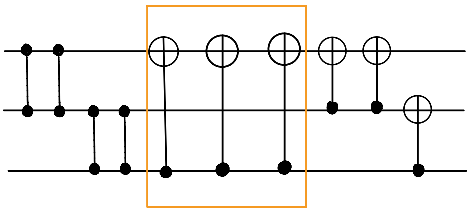
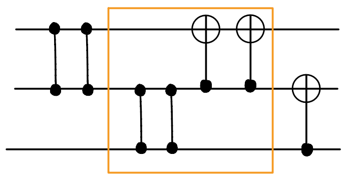
C_{13}^{3}: 

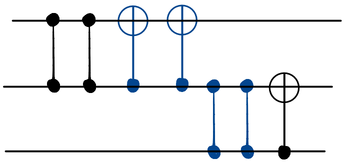
LemZ

R_{52}: 

Proof cont.

R_{52}:  $\overset{\text{WTS}}{=\!=}$ 

Then R_{52}.LHS :=  $\overset{C_6^{2*}}{=\!=}$ 

$\overset{C_{13}^{3}}{=\!=}$  =: R_{52}.RHS

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