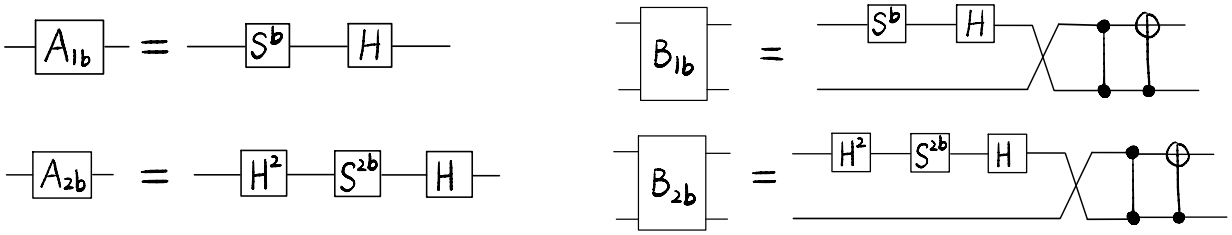
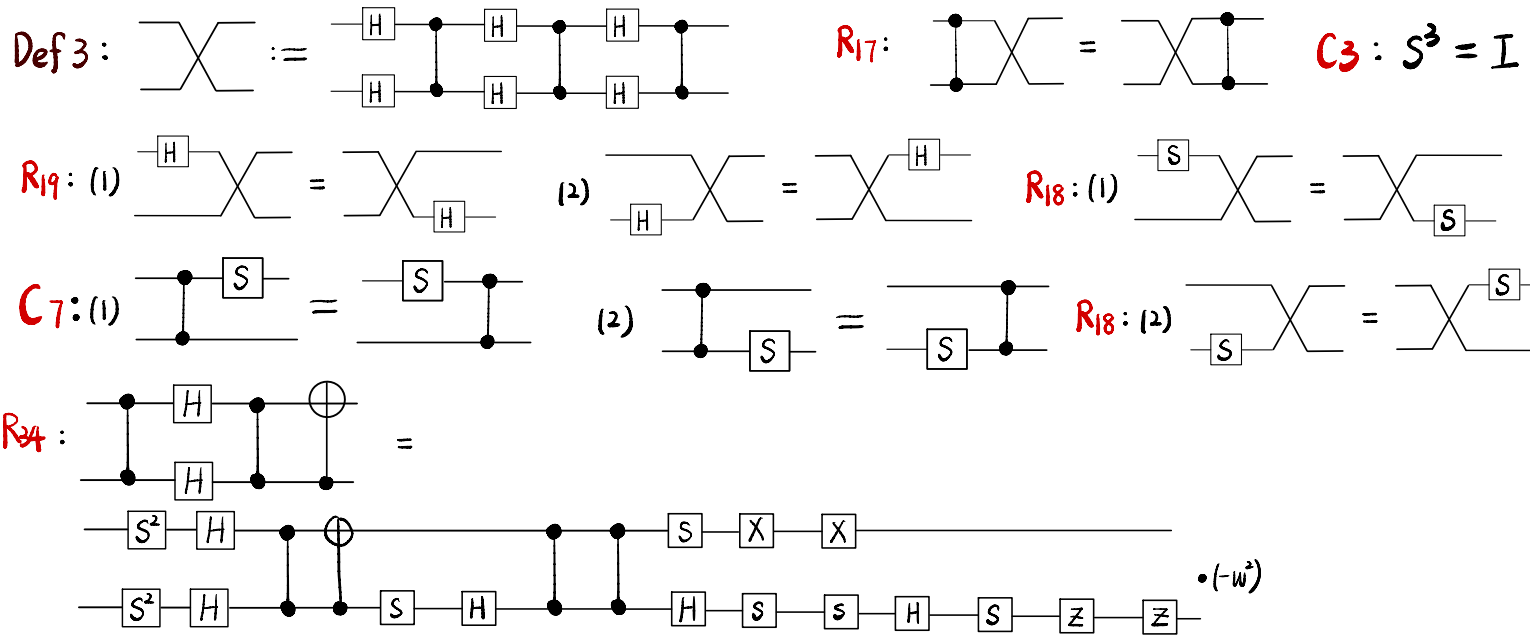
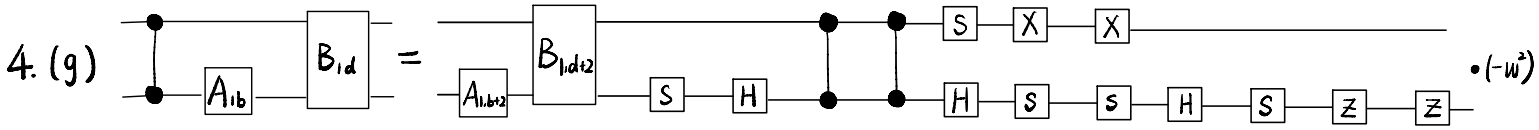
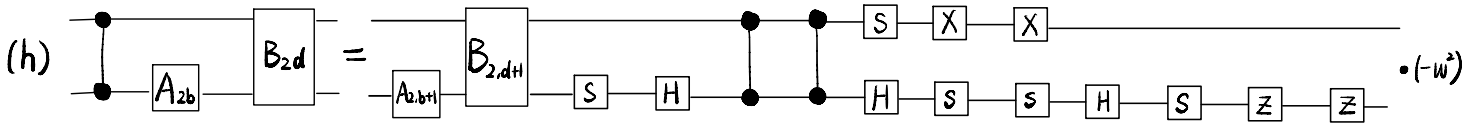


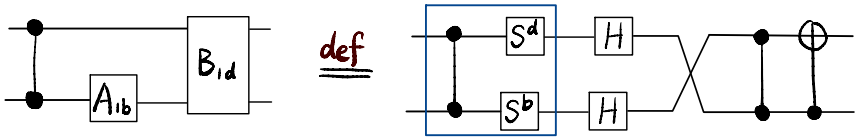


Lem 52 By Def 3, C3, C7, C8, R17, R18, R19 & R34,

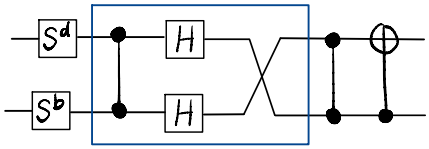




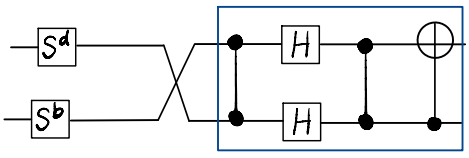
Proof: 4. (g). LHS :=



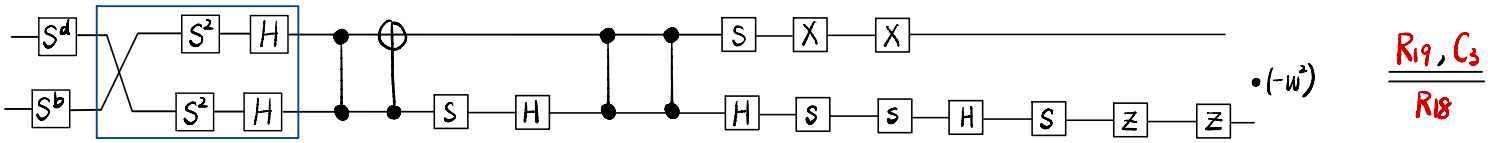
C7 =



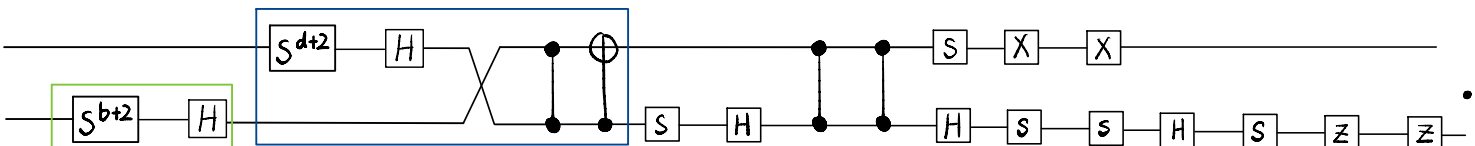
R17 / R19 =

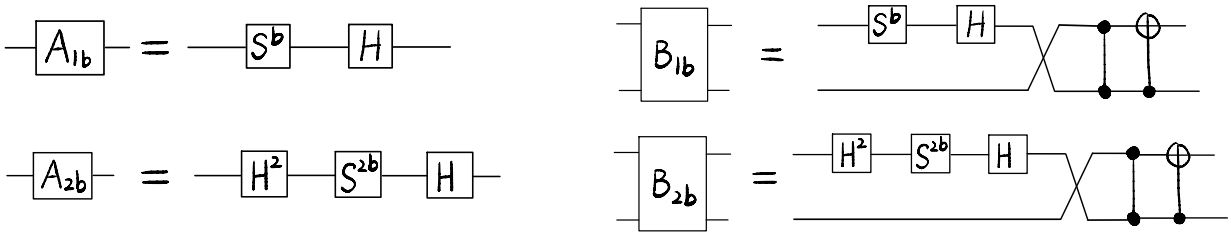


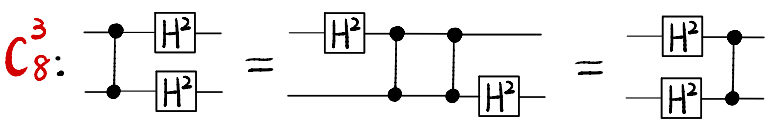
R34 =



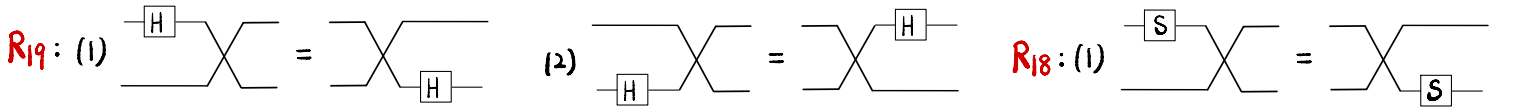
R19, C3 / R18 =

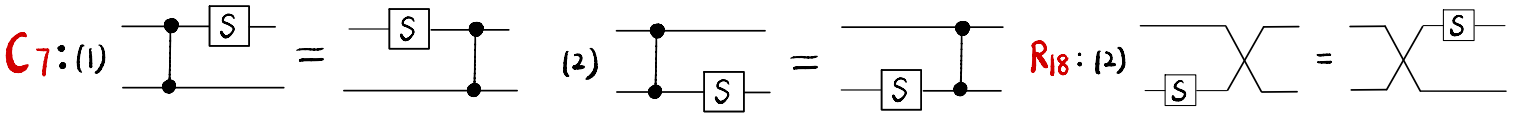


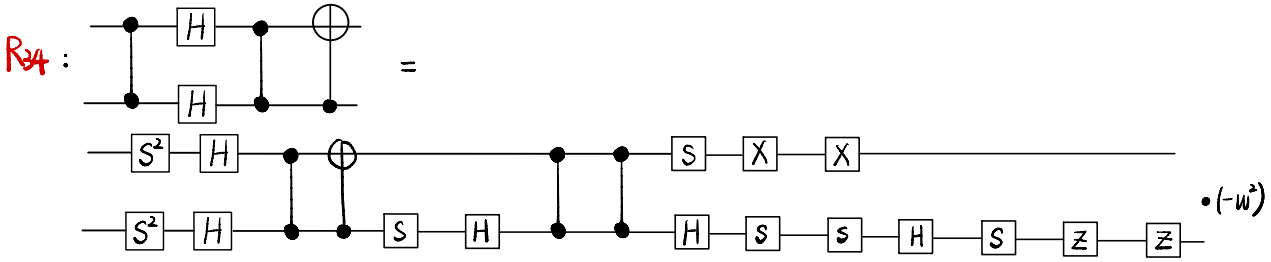

A_{1b} = S^b H
B_{1b} = S^b H
A_{2b} = H^2 S^{2b} H
B_{2b} = H^2 S^{2b} H


C_8^3: H^2 H^2 = H^2 H^2 = H^2 H^2

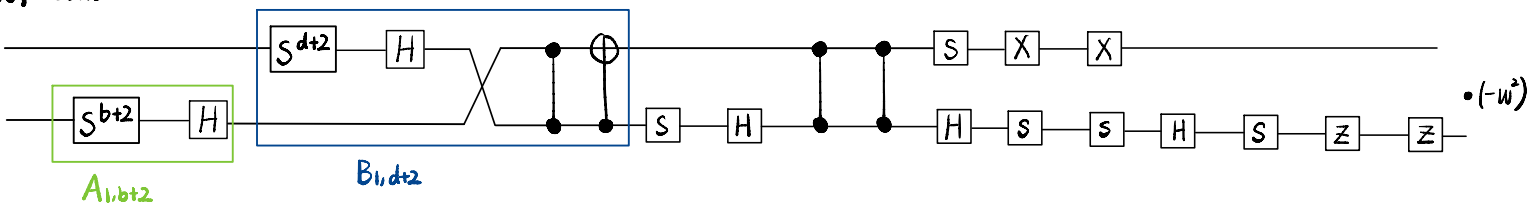

Def 3 : := H H H H H H
R_{17}: =
C_3 : $S^3 = I$

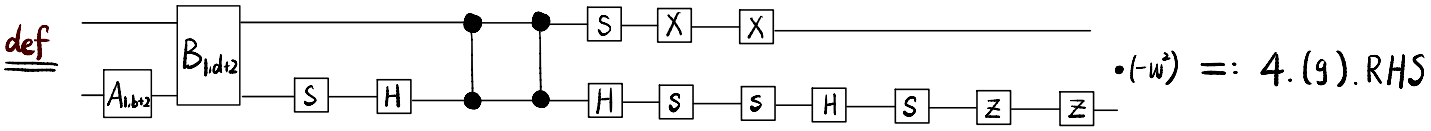

R_{19} : (1) H = H
(2) H = H
R_{18} : (1) S = S


C_7 : (1) S = S
(2) S = S
R_{18} : (2) S = S

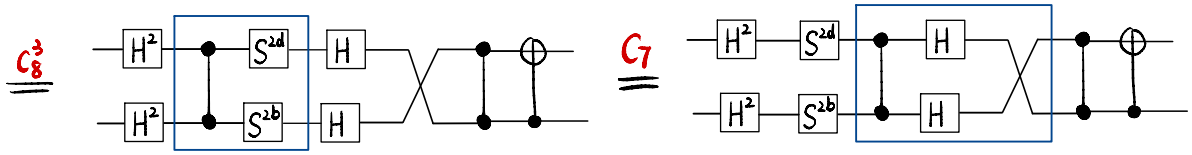

R_{34} :
H H
S^2 H S H S X X
S^2 H S H H S S H S Z Z
$\cdot(-w^2)$

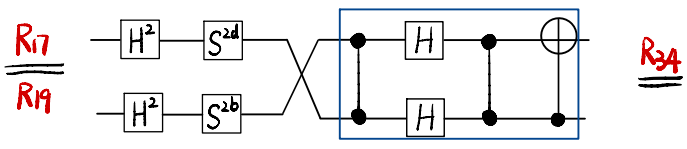
Proof cont.

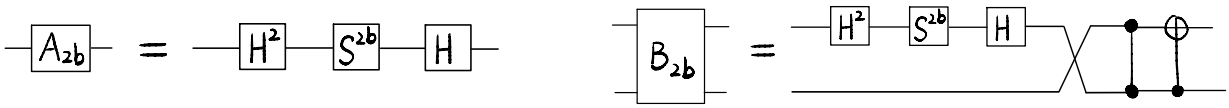

S^{d+2} H
S^{b+2} H
S H S X X
H S S H S Z Z
$\cdot(-w^2)$
$A_{1,b+2}$
$B_{1,d+2}$


def
$B_{1,d+2}$
$A_{1,b+2}$
S H S X X
H S S H S Z Z
$\cdot(-w^2)$ =: 4.(g).RHS

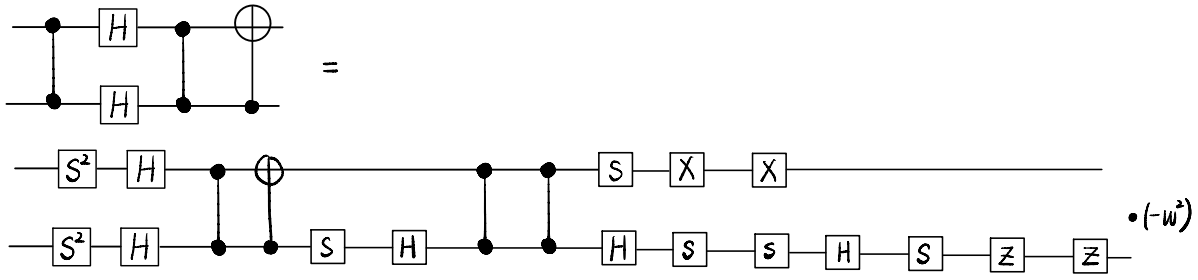

4.(h).LHS :=
A_{2b}
B_{2d}
def
H^2 S^{2d} H
H^2 S^{2b} H


C_8^3
H^2 S^{2d} H
H^2 S^{2b} H
C_7
H^2 S^{2d} H
H^2 S^{2b} H

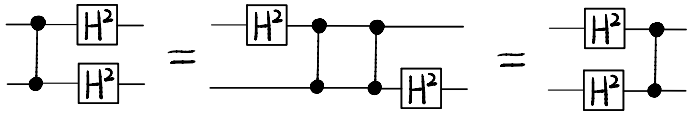

R_{17}
R_{19}
H^2 S^{2d} H
H^2 S^{2b} H
R_{34}



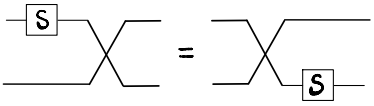
R_{34} :



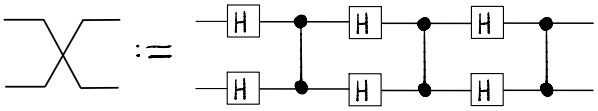
C_8^3 :



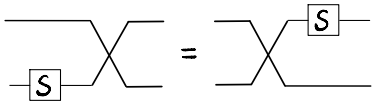
R_{18} : (1)



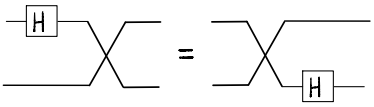
Def 3 :



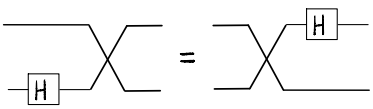
R_{18} : (2)



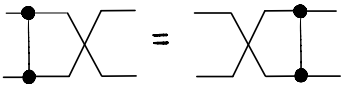
R_{19} : (1)



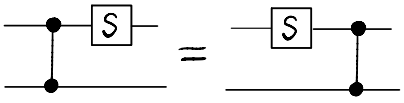
(2)



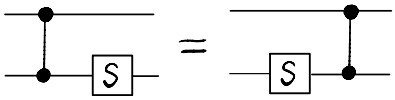
R_{17} :



C_7 : (1)



(2)



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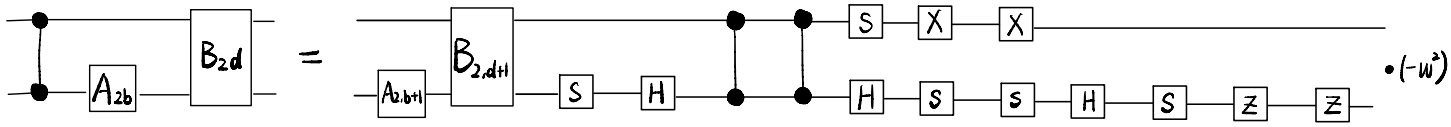
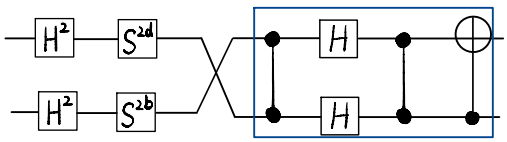
4. (h)

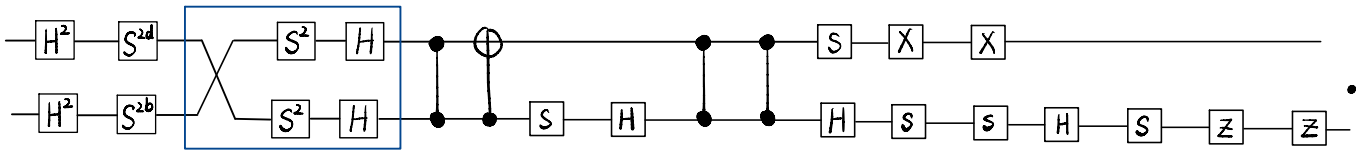


Proof cont.



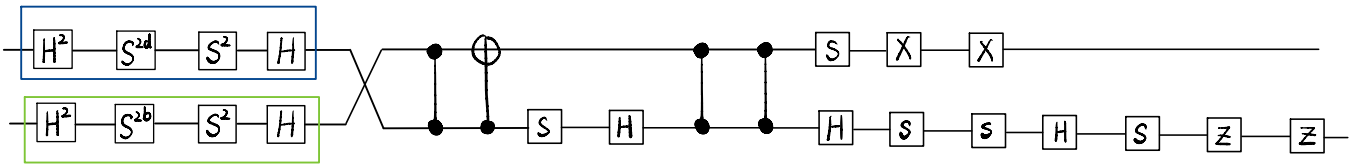
R_{34}

R_{34}

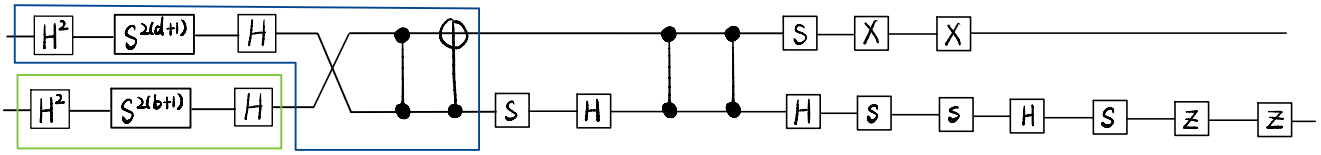


R_{19}, C_3

R_{18}

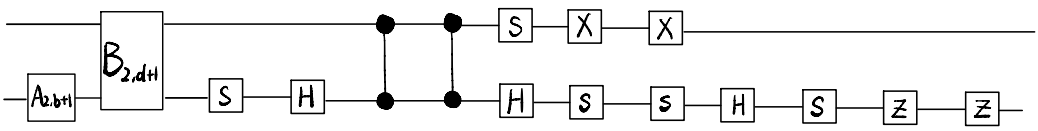


=

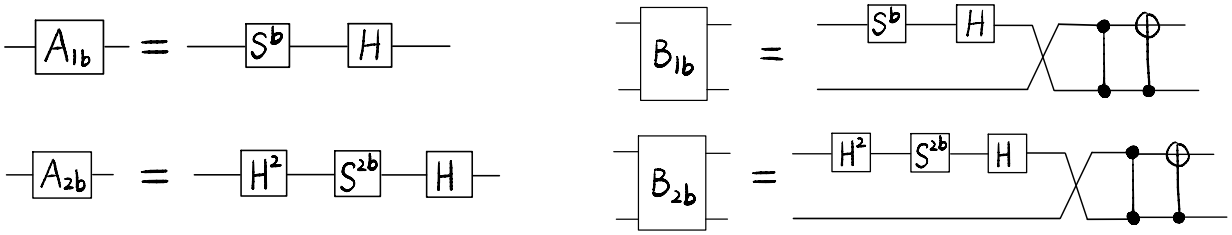


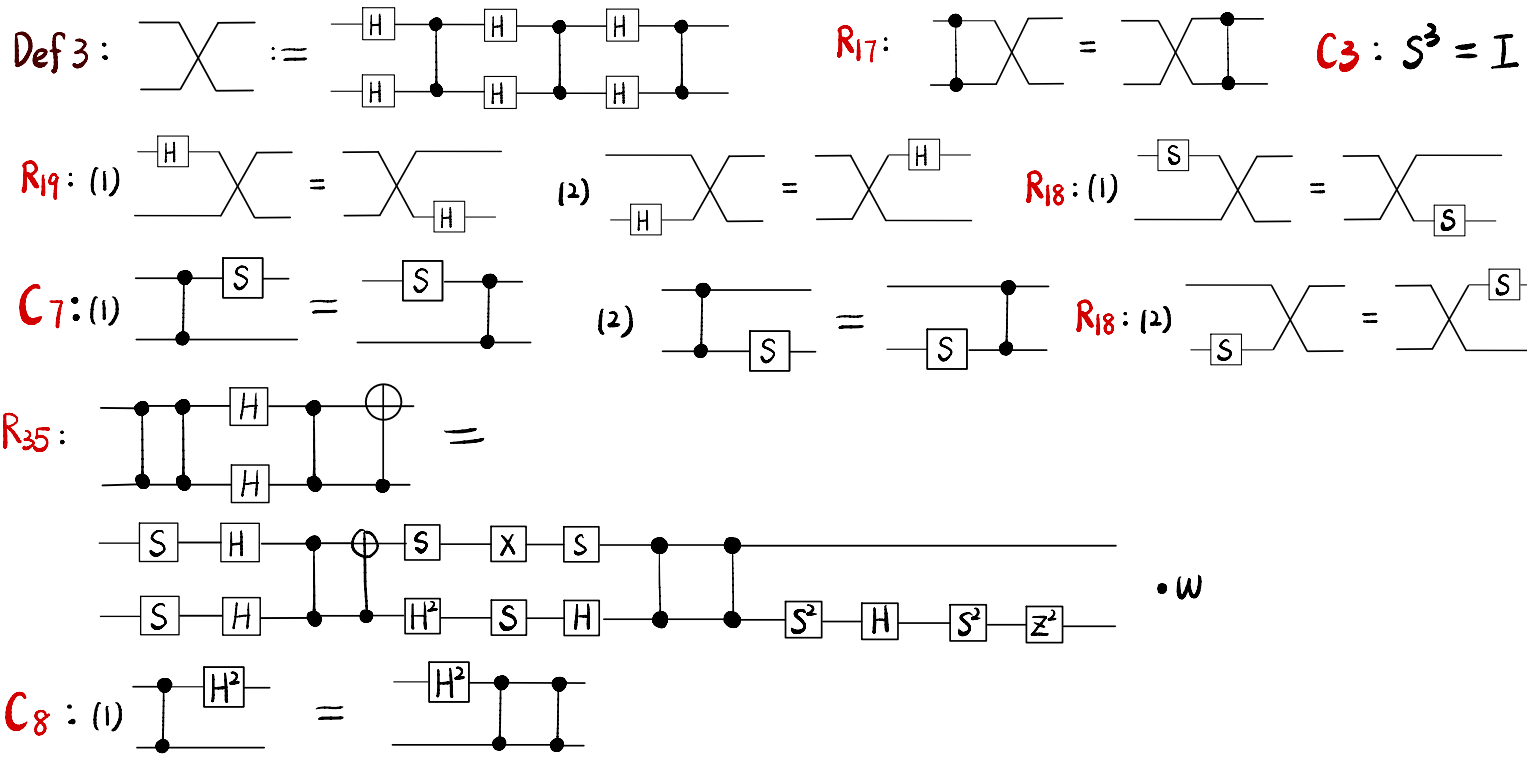
$A_{2,b+1}$ $B_{2,d+1}$

def

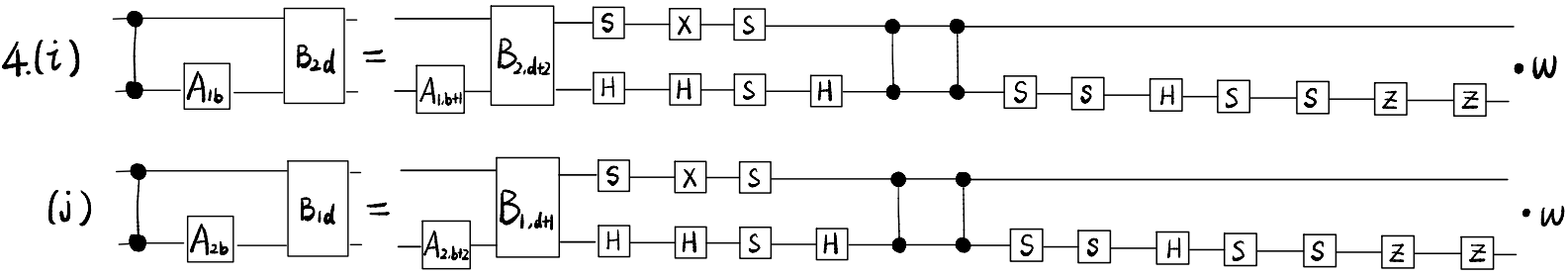


=: 4. (h). RHS

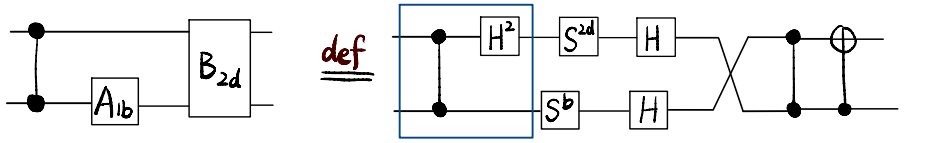




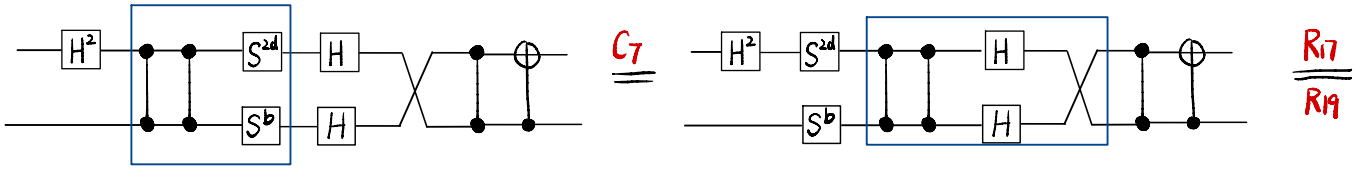
Lem 53 By Def 3, C_3, C_7, C_8, R_{17}, R_{18}, R_{19} & R_{35},



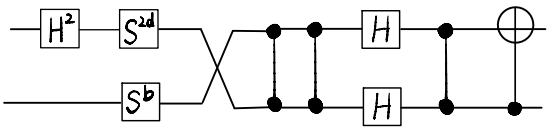
Proof: 4.(i).LHS :=



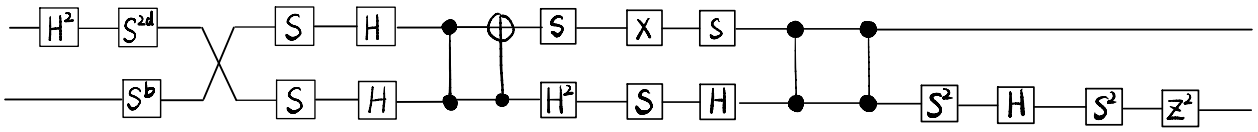
C_8

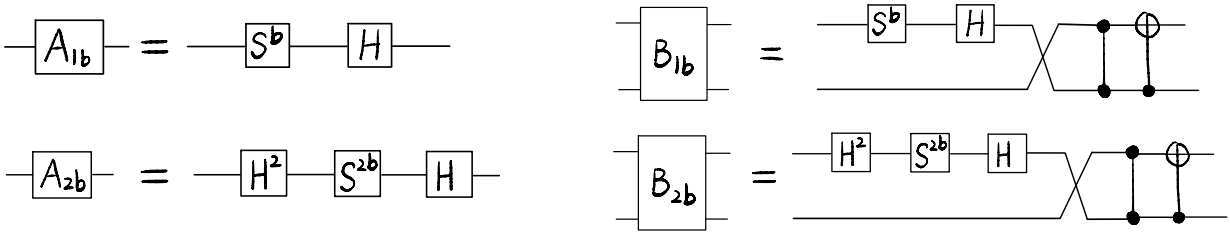


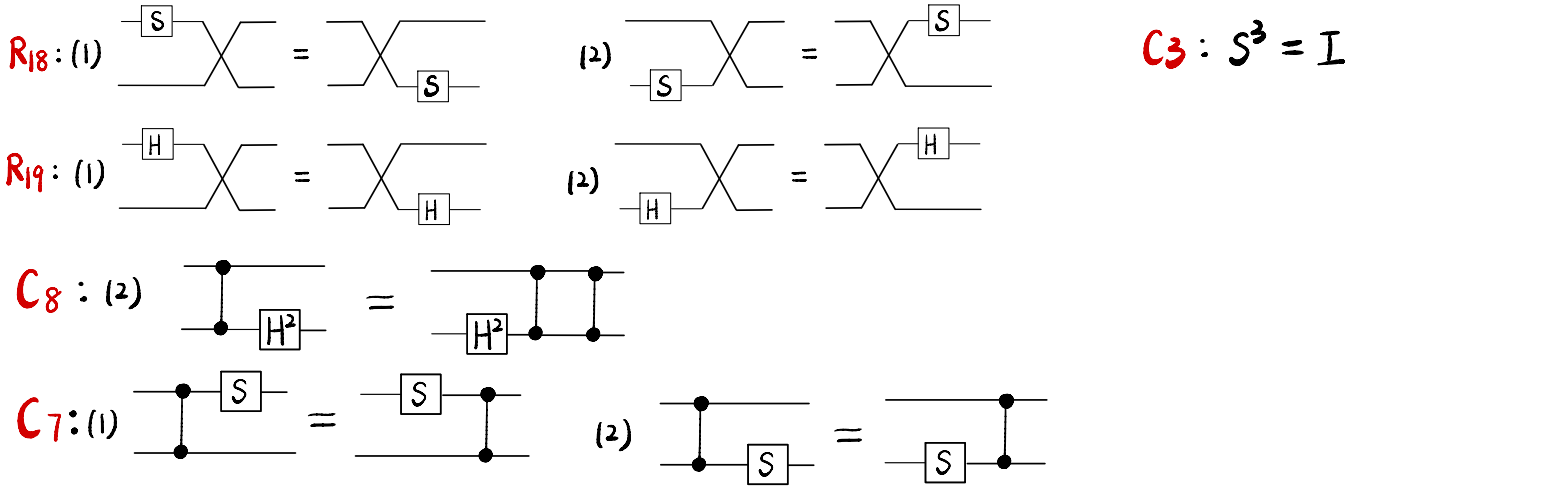
R_{17} / R_{19}

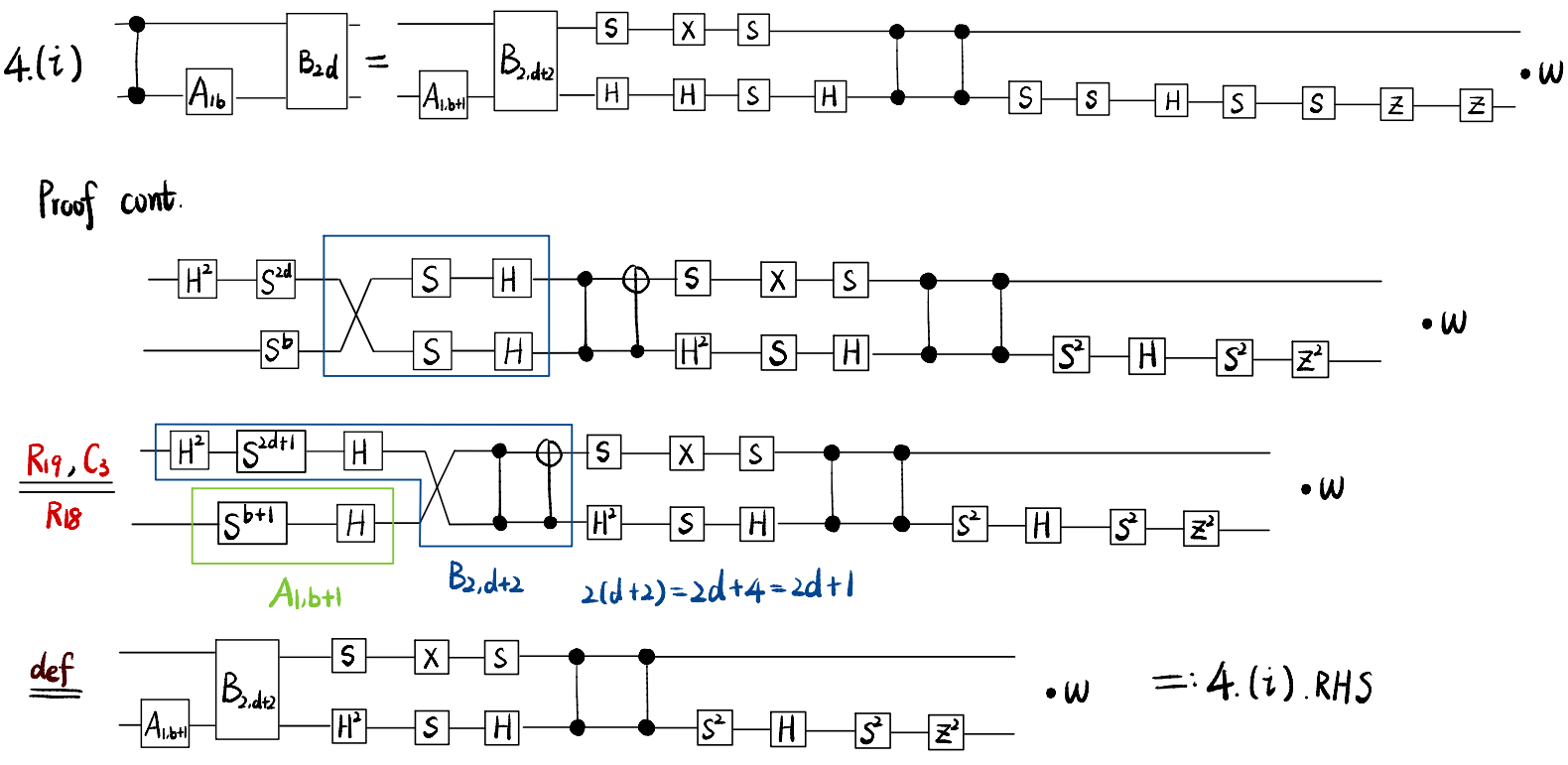


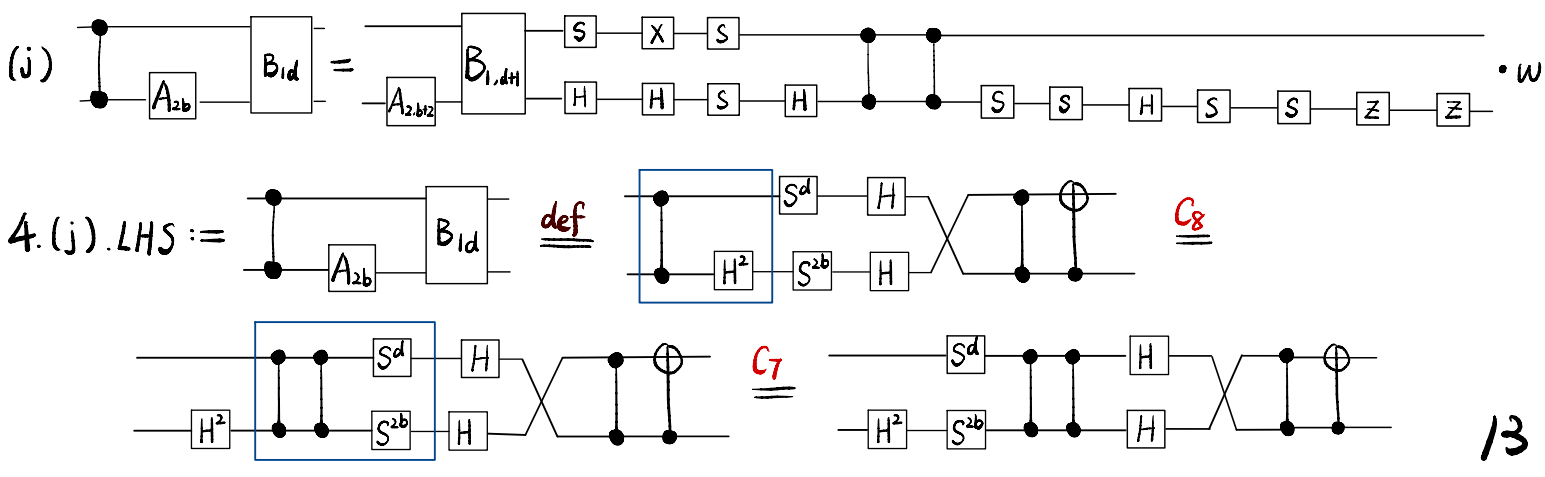
R_{35}

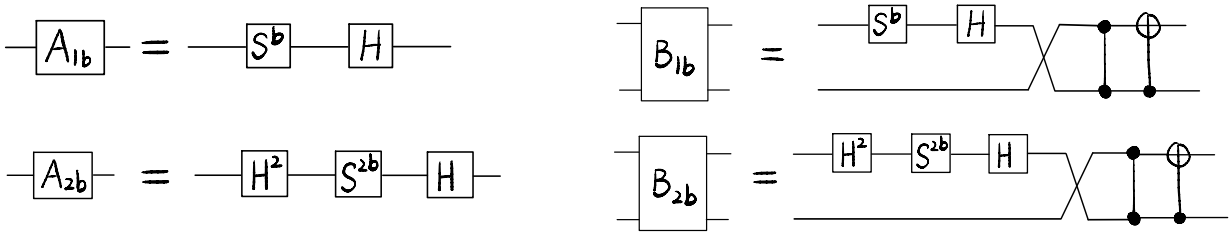


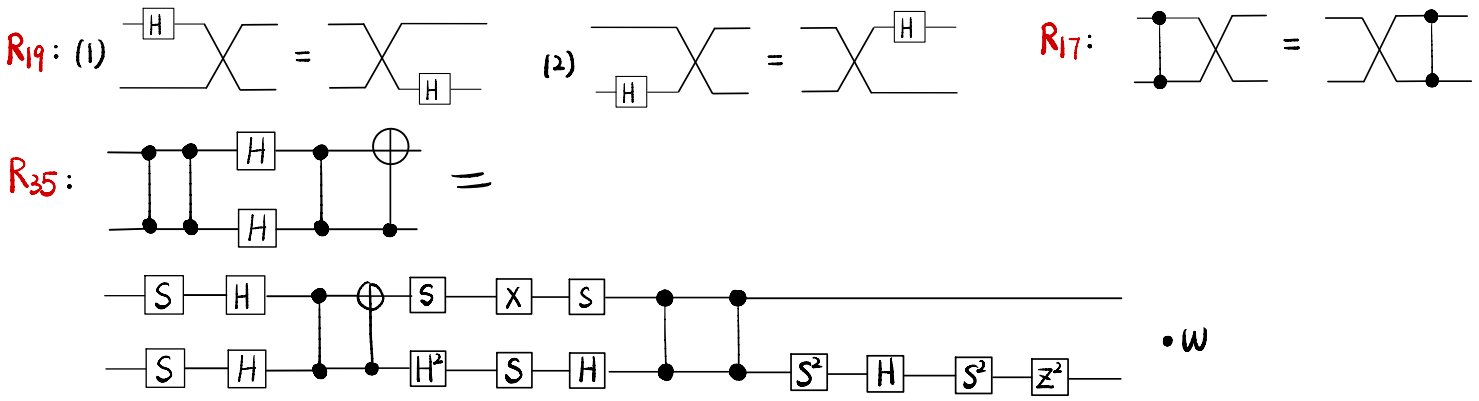

A_{1b} = S^b H
B_{1b} = S^b H
A_{2b} = H^2 S^{2b} H
B_{2b} = H^2 S^{2b} H

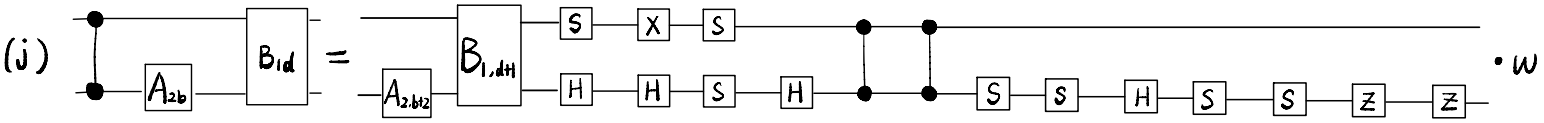

R_{18}: (1) S = S
(2) S = S
C_3: $S^3 = I$
R_{19}: (1) H = H
(2) H = H
C_8: (2) H^2 = H^2
C_7: (1) S = S
(2) S = S


4.(i) A_{1b} B_{2d} = $A_{1,b+1}$ $B_{2,d+2}$ S X S H H S H S S H S S Z Z • w
Proof cont.
H^2 S^{2d} S H H S S^b S H S X S H^2 S H S^2 H S^2 Z^2 • w
R_{19}, C_3 / R_{18}
H^2 S^{2d+1} H S^{b+1} H S X S H^2 S H S^2 H S^2 Z^2 • w
$A_{1,b+1}$ $B_{2,d+2}$ $2(d+2) = 2d+4 = 2d+1$
def
$A_{1,b+1}$ $B_{2,d+2}$ S X S H^2 S H S^2 H S^2 Z^2 • w =: 4.(i).RHS

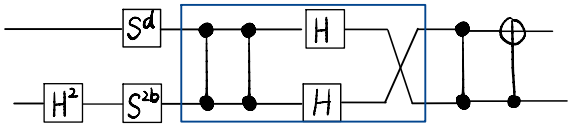

(j) A_{2b} B_{1d} = $A_{2,b+2}$ $B_{1,d+1}$ S X S H H S H S S H S S Z Z • w
4.(j).LHS := A_{2b} B_{1d} def H^2 S^d H S^{2b} H C_8
H^2 S^d H S^{2b} H C_7 H^2 S^d H S^{2b} H



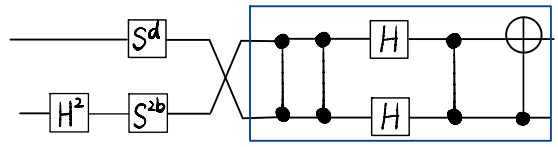




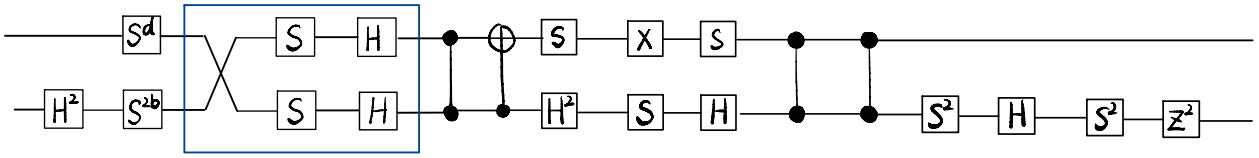
Proof cont.



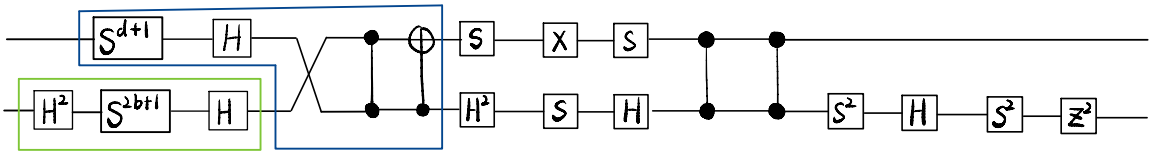
R17 = R19



R35 =



R19, C3 = R18



$A_{2,b+2}$ $2(b+2) = 2b+4 = 2b+1$ $B_{1,d+1}$

def =