

$$S = A \oplus B \oplus 0 = A \oplus B$$

$$C = \underline{AB + C(A \oplus B)}$$

$$= \underline{AB + AC + BC}$$

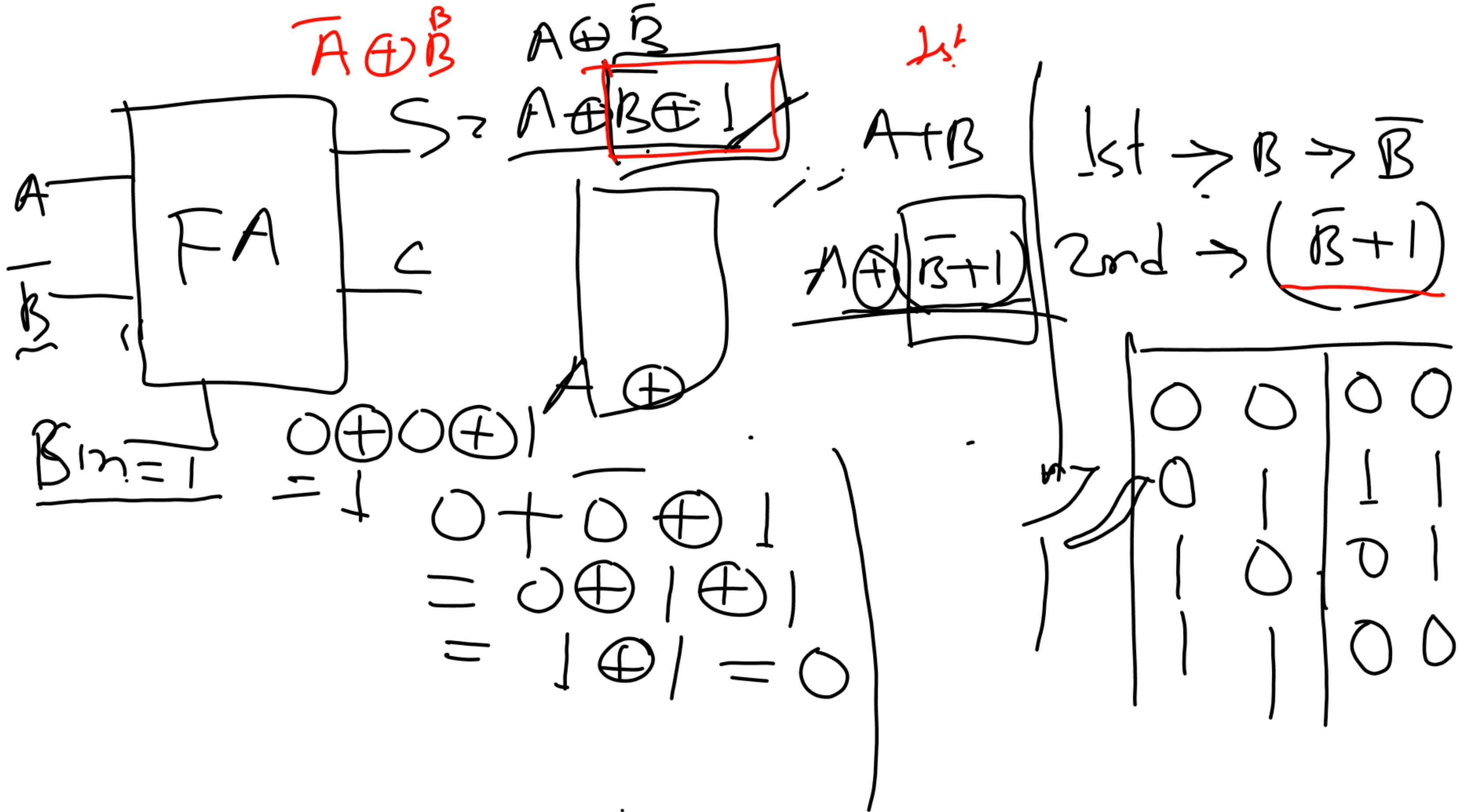
$$A \oplus (B \oplus 1)$$

$$A \oplus \bar{B}$$

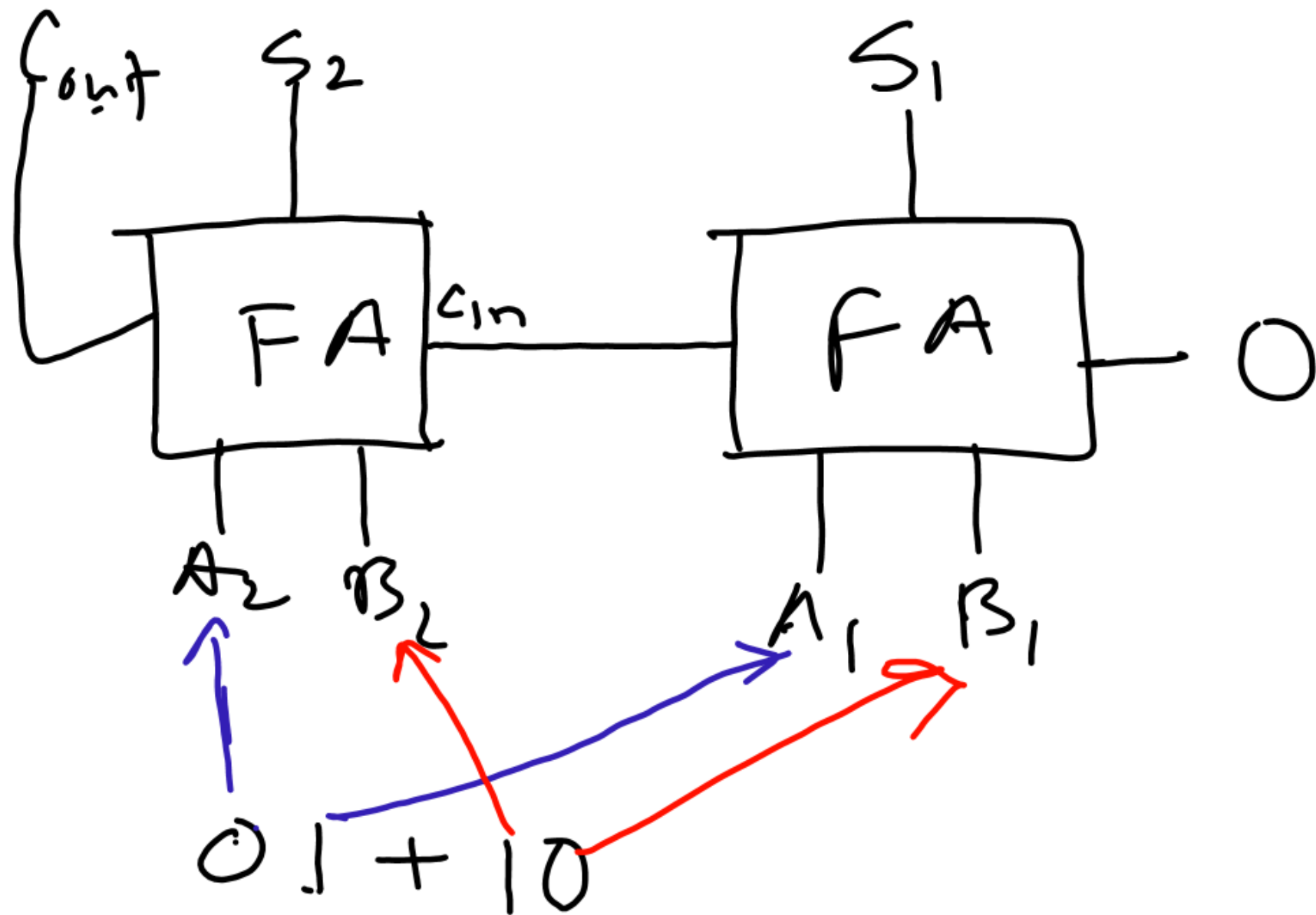
$$\underline{A \oplus 0 = A}$$

$$A \oplus 1 = \bar{A}$$

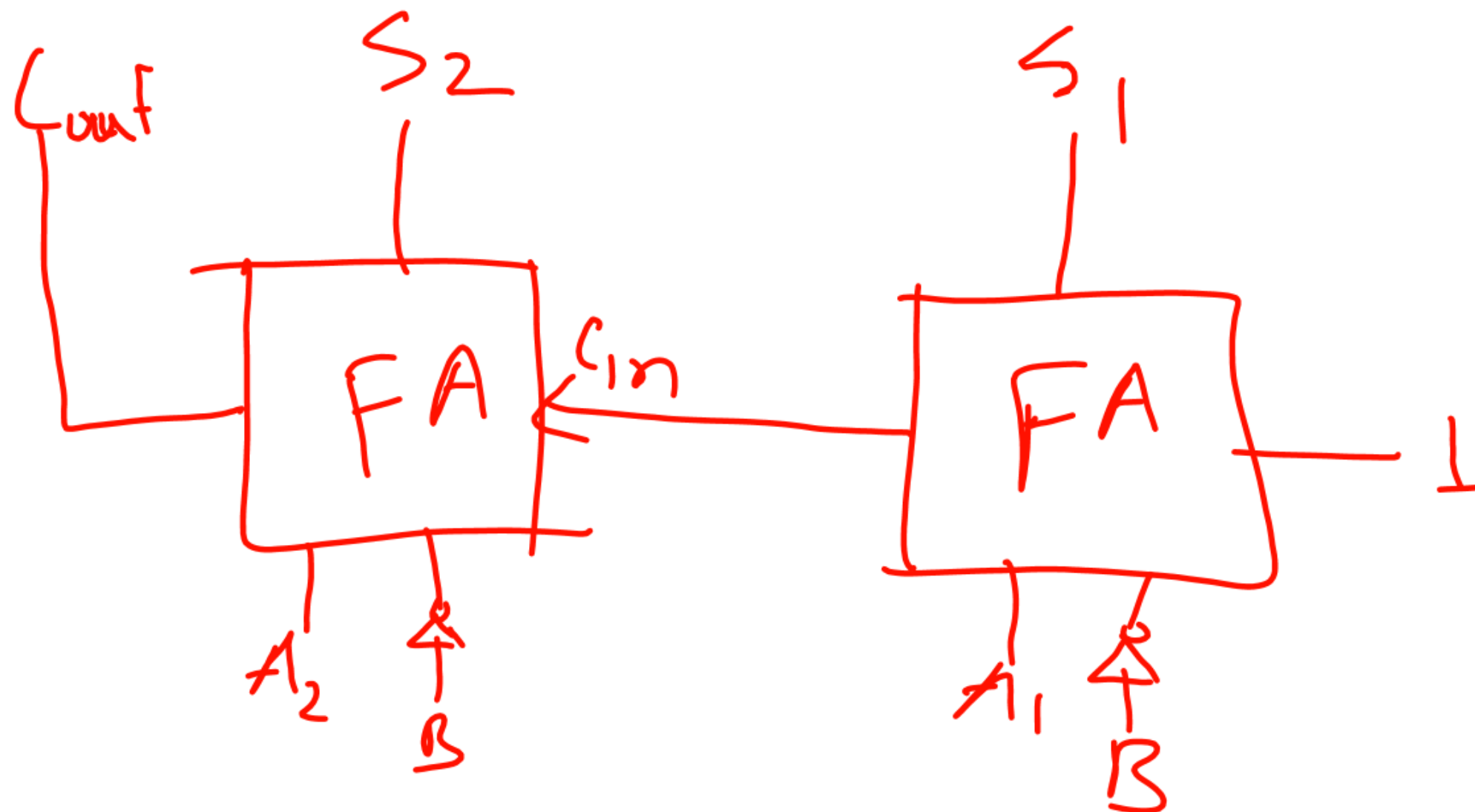
0	0	0
0	1	1
1	0	1
1	1	0



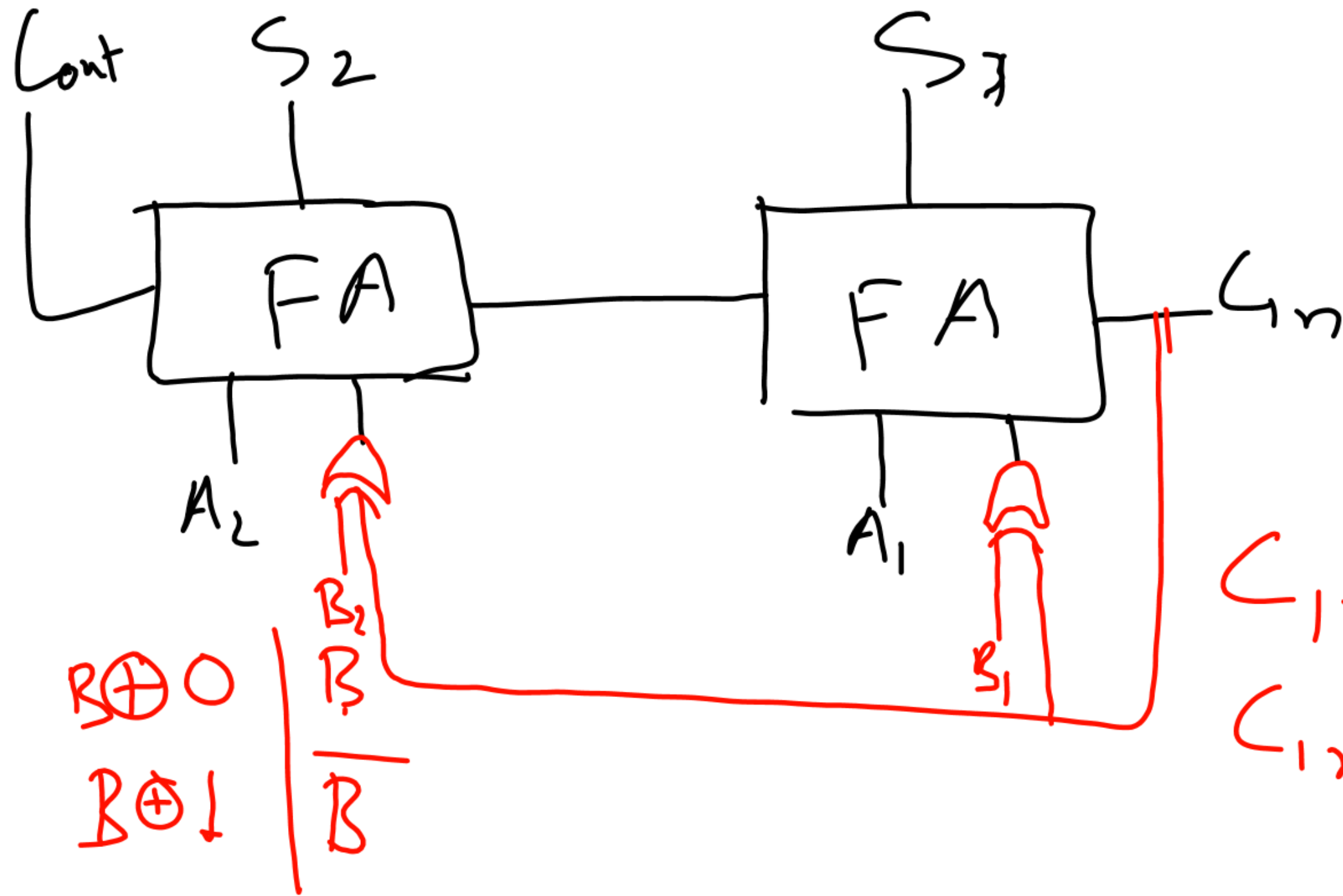
$$\begin{aligned}
 & AB + C_m(A \oplus B) \quad \begin{array}{c} 0 \\ | \end{array} \\
 & \hline
 & = 0 \cdot 0 + 1(0 \oplus 0) \\
 & = 0 + 0 \\
 & = 0
 \end{aligned}$$



2 bit  
Full Adder



2bit  
Subtractor



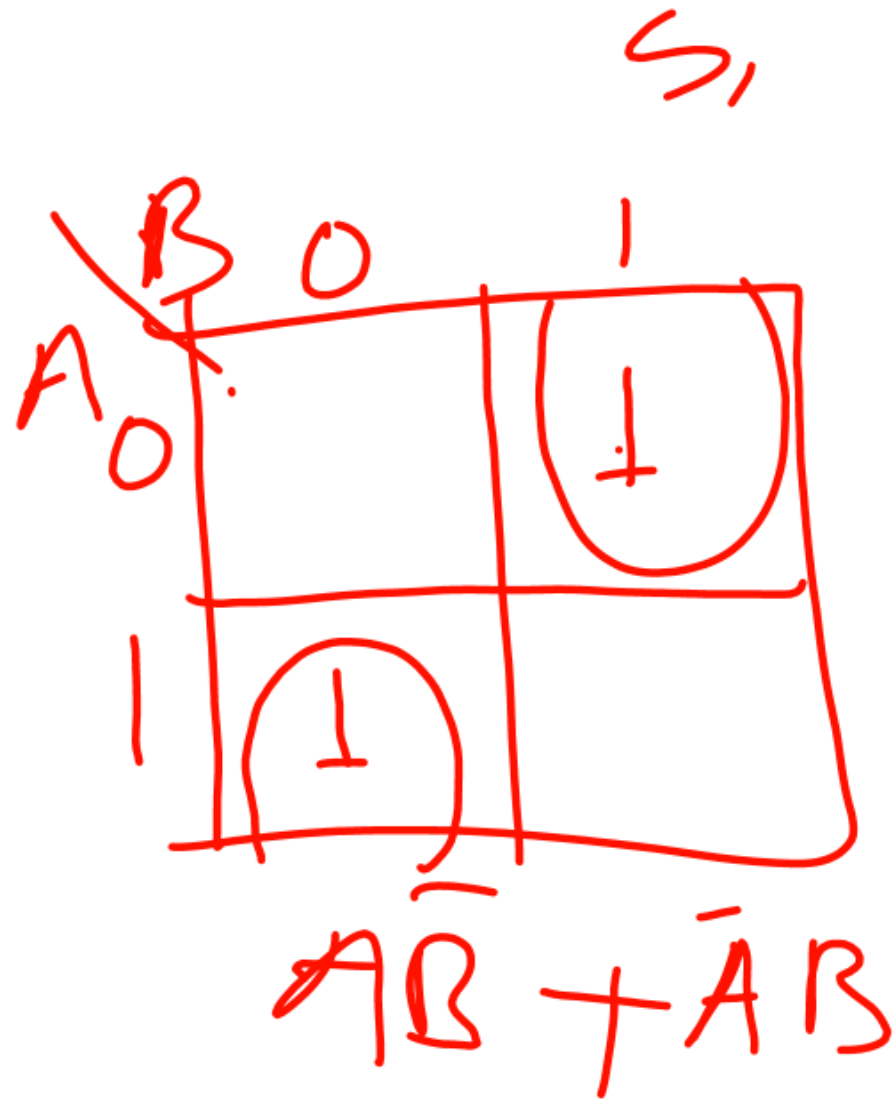
2b.it

adder/  
Subtractor

$C_{in} = 0 \rightarrow \text{Add}$

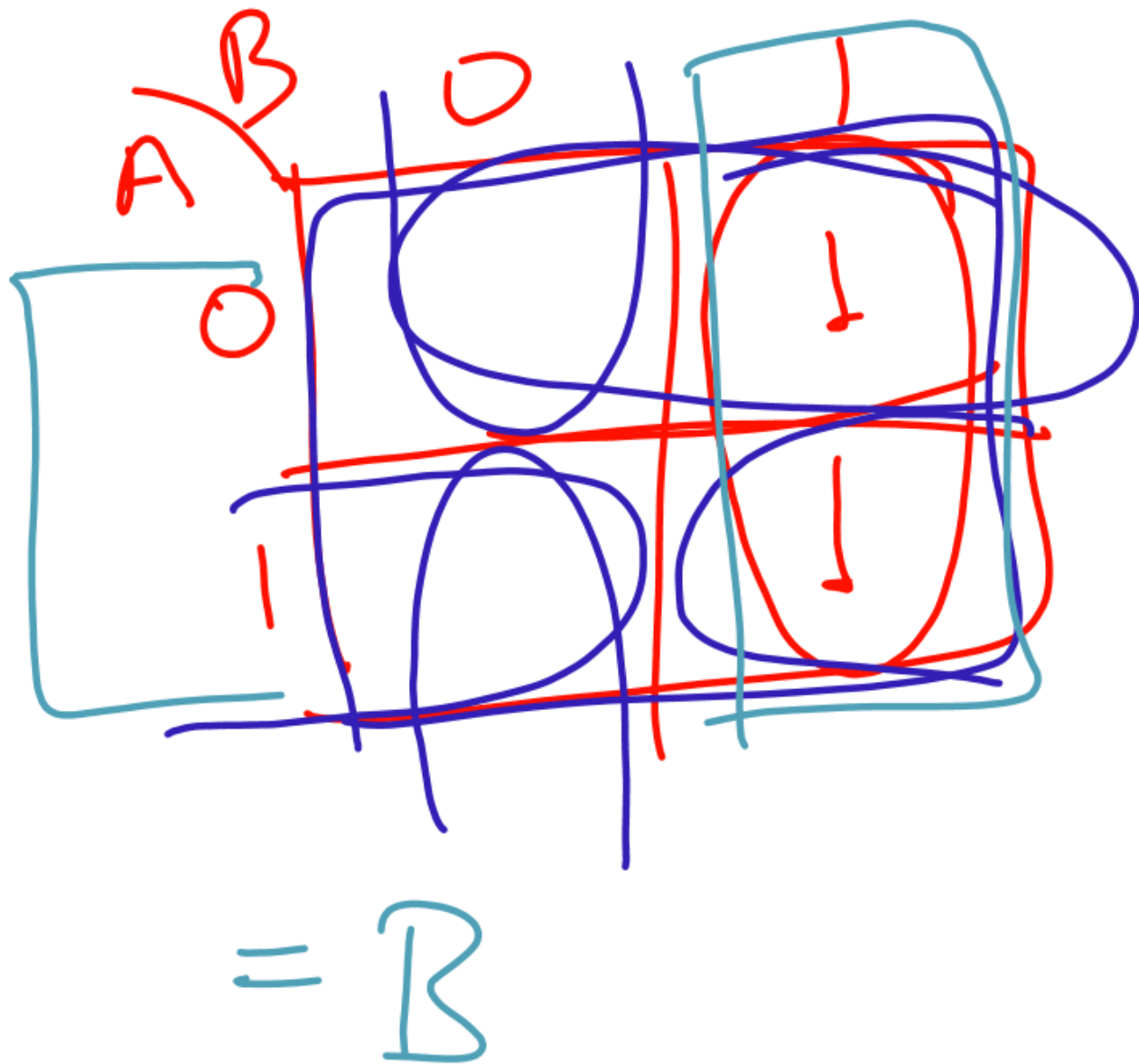
$C_{in} = 1 \rightarrow \text{Sub}$

# K-Map



$$S = \bar{A}B + A\bar{B}$$
$$L = AB$$

A	B	O	S
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0



$$\begin{array}{cc|c}
 0 & 0 & 0 \\
 0 & 1 & 1 \\
 1 & 0 & 0 \\
 1 & 1 & 1
 \end{array}$$

$$\bar{A}B + AB$$

$$= AB$$



A \ B	0	1
	0	1
0	0	1
1	0	1

$= B$

$\overline{B} = 1$

A \ B	0	1
	0	1
0	1	1
1		

$= \overline{A}$

A, B, C / AB, C

<u>A</u>	<u>B, C</u>			
	00	01	11	10
0	1			1
1		1	1	

~~B, C~~  
00  
01  
10  
11

00  
01  
10  
11

$$= AC + \bar{A}\bar{C}$$

$$= A \odot C$$

B		0	1
A	0	00	01 L
	1	10 L	11

HA

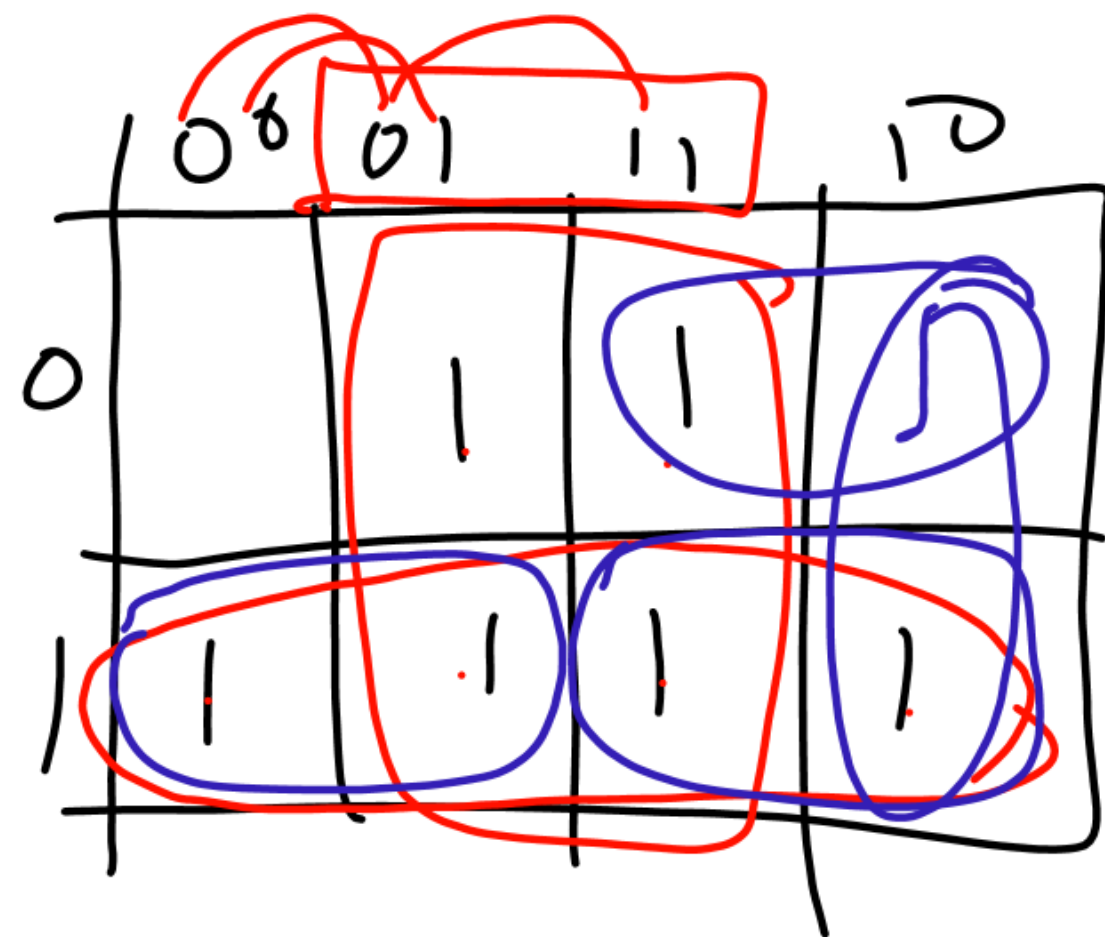
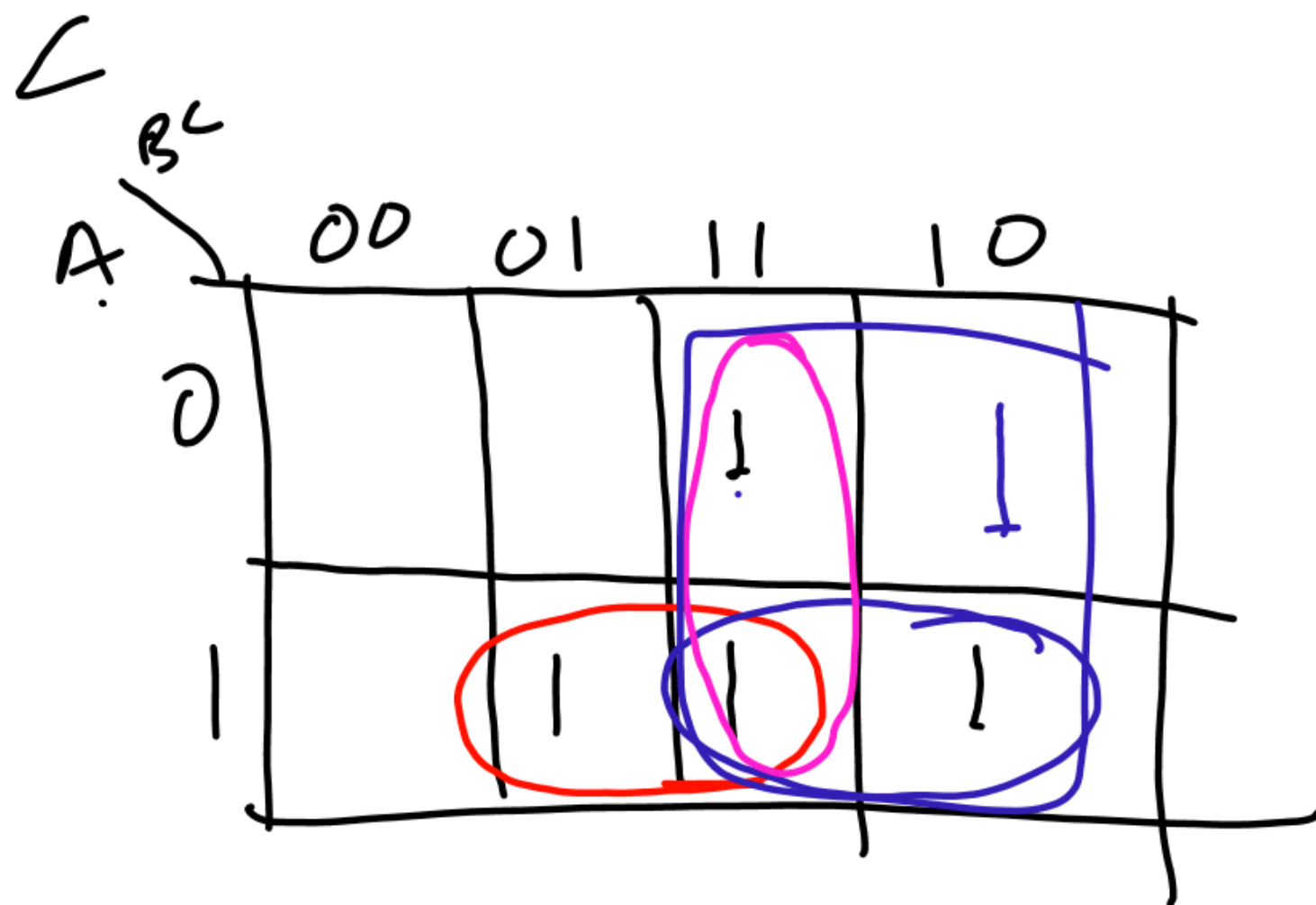
A	B	C	S
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

ABC / A, B, C

A \ BC				
	00	01	11	10
0	1			1
1		1	1	

$$= AC + \bar{A}\bar{C}$$

	11	01	00	10
0			1	1
1	1	1		



	00	01	11	10
0	1			1
1				