

Row	a	b	f
0	0	0	1
1	0	1	1
2	1	0	0
3	1	1	1

	b	
a	0	1
0	1	1
1	0	1

Diagram showing a 2x2 grid with columns labeled 'b' and rows labeled 'a'. The top row is labeled 'a' and the left column is labeled 'b'. The cells (0,0), (0,1), and (1,1) are circled in red. A red arrow points from the label 'a' to the top row, and another red arrow points from the label 'b' to the left column.

$$f = a' + b$$

$$f = a'b' + a'b + ab$$

$$= a'(b' + b) + ab$$

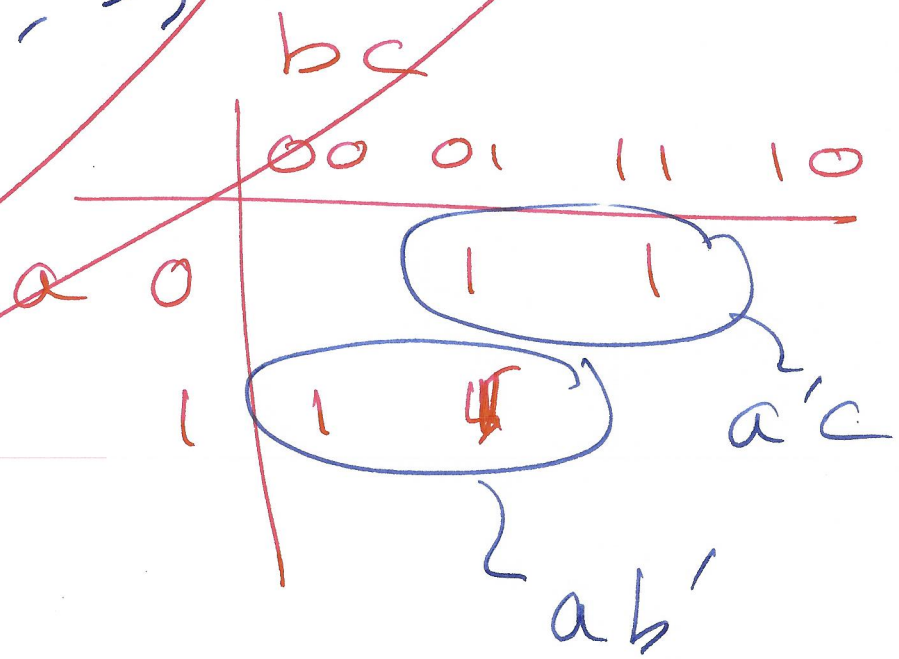
$$= a' + ab + a'b$$

$$= a' + b(a + a')$$

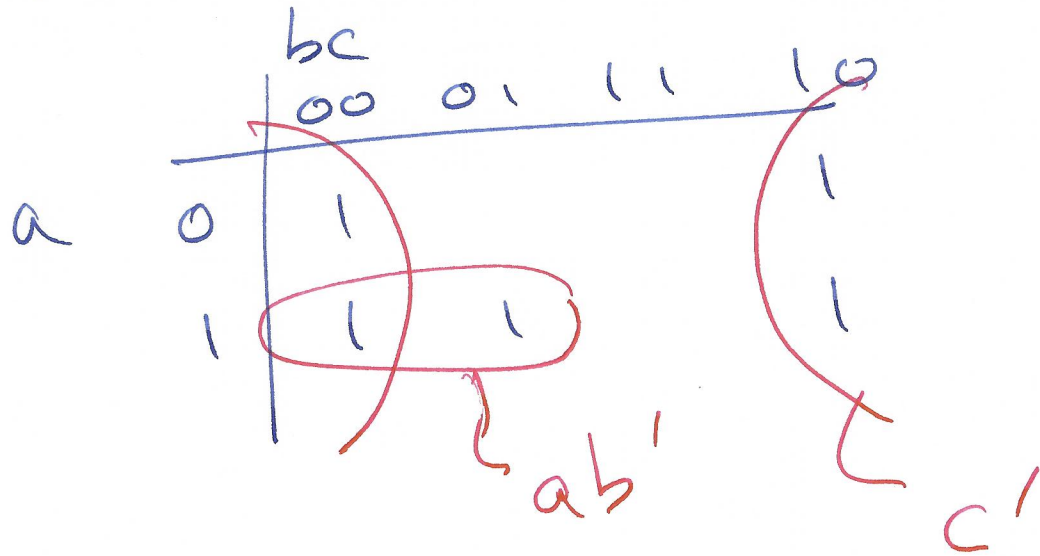
$$= a' + b$$

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$$\begin{aligned}
 m &= \overset{001}{a'b'c} + \overset{011}{a'bc} + \overset{100}{\underline{abc'}} + \overset{101}{\underline{a'bc'}} \\
 &= \sum m(1, 3, 4, 5) \\
 &= \underline{ab'} + \underline{a'c}
 \end{aligned}$$



$$f(a, b, c) = \sum m(0, 2, 4, 5, 6)$$



$$f = ab' + c'$$

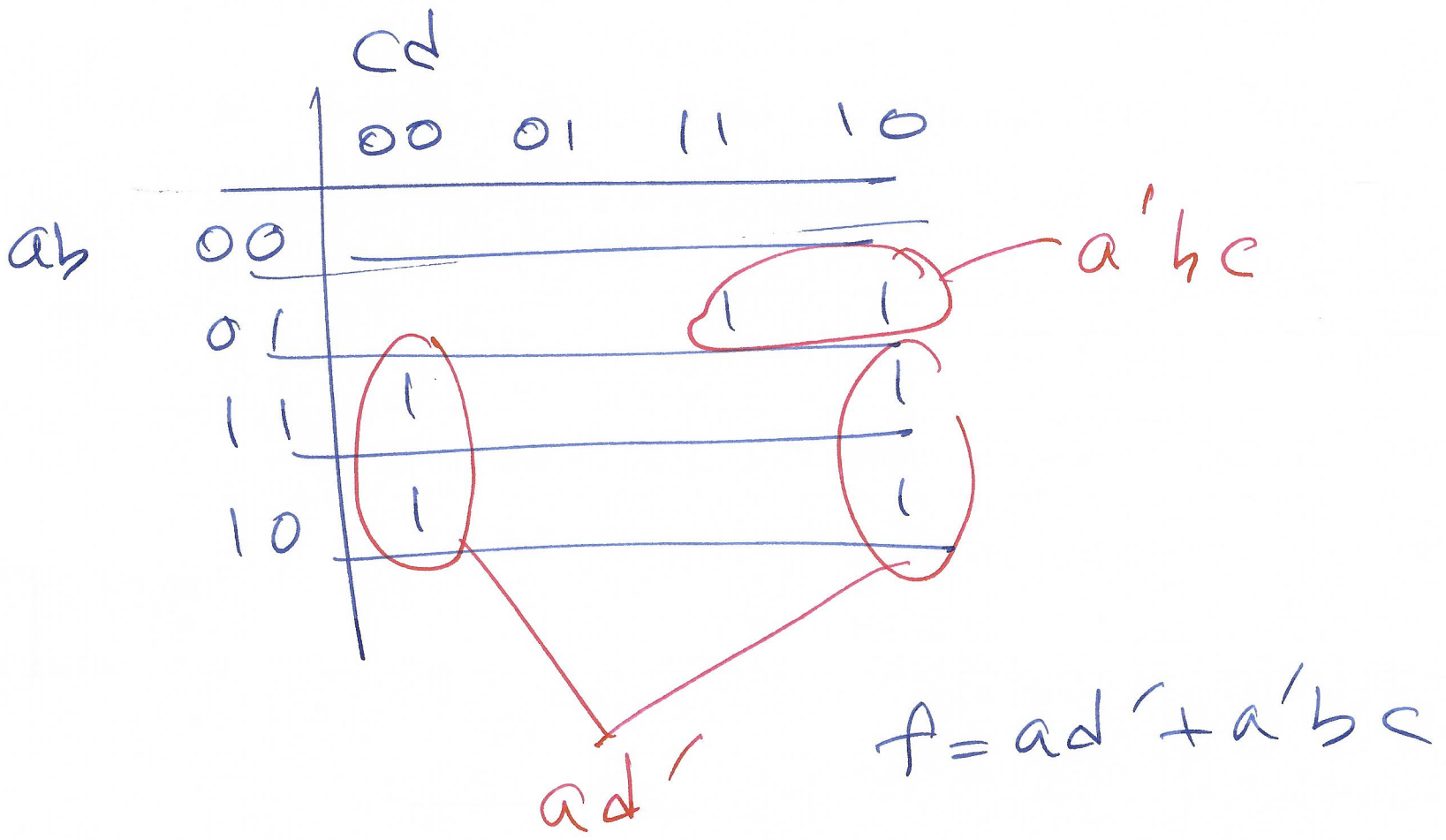
$$f = \sum m(1, 4, 5, 6)$$

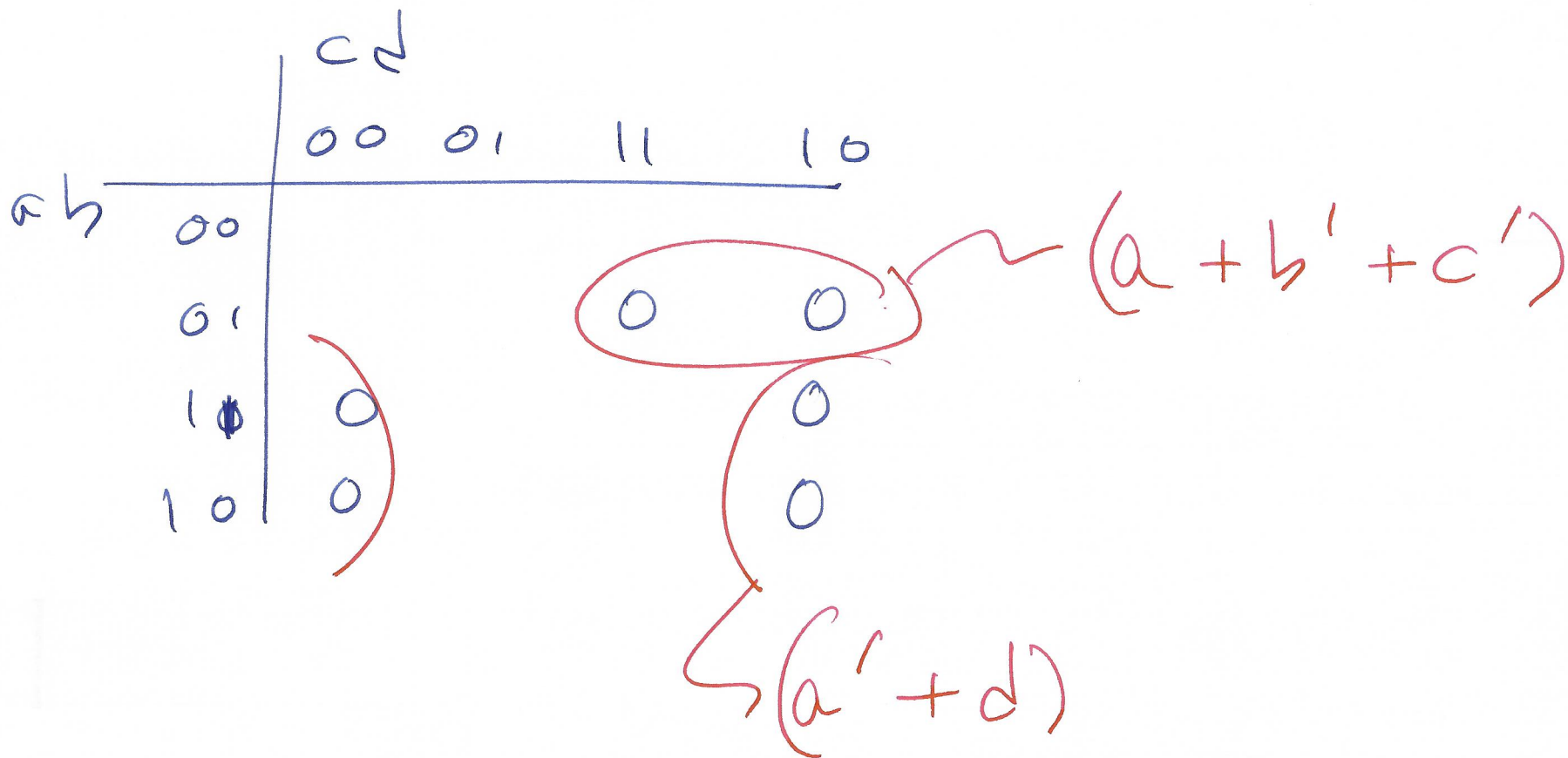
		bc			
		00	01	11	10
a	0		1		
	1	1	1		

Diagram illustrating the Karnaugh map for the function $f = \sum m(1, 4, 5, 6)$. The map shows the following cells with 1s:

- Cell (a=0, bc=01) is circled in red, labeled $b'c$.
- Cell (a=1, bc=00) is circled in red, labeled ac' .
- Cell (a=1, bc=01) is circled in red, labeled $b'c$.

$$f = ac' + b'c$$





$$f = (a' + d)(a + b' + c')$$

Logical versus Bitwise AND

A

0	1	1	0
---	---	---	---

B

0	0	0	1
---	---	---	---

Logical value
of A or B
is TRUE
if ANY Bit = 1

$A \& B \rightarrow$

0	0	0	0
---	---	---	---

 $\rightarrow 0$

$A \&\& B \rightarrow$ Evaluate A as logical
" B "
AND the two $\rightarrow 1$