10. Minimice la función

$f(x,y,z) = xyz + \bar{x}yz + x\bar{y}z + xy\bar{z}$

mediante el método de Quine - McCluskey

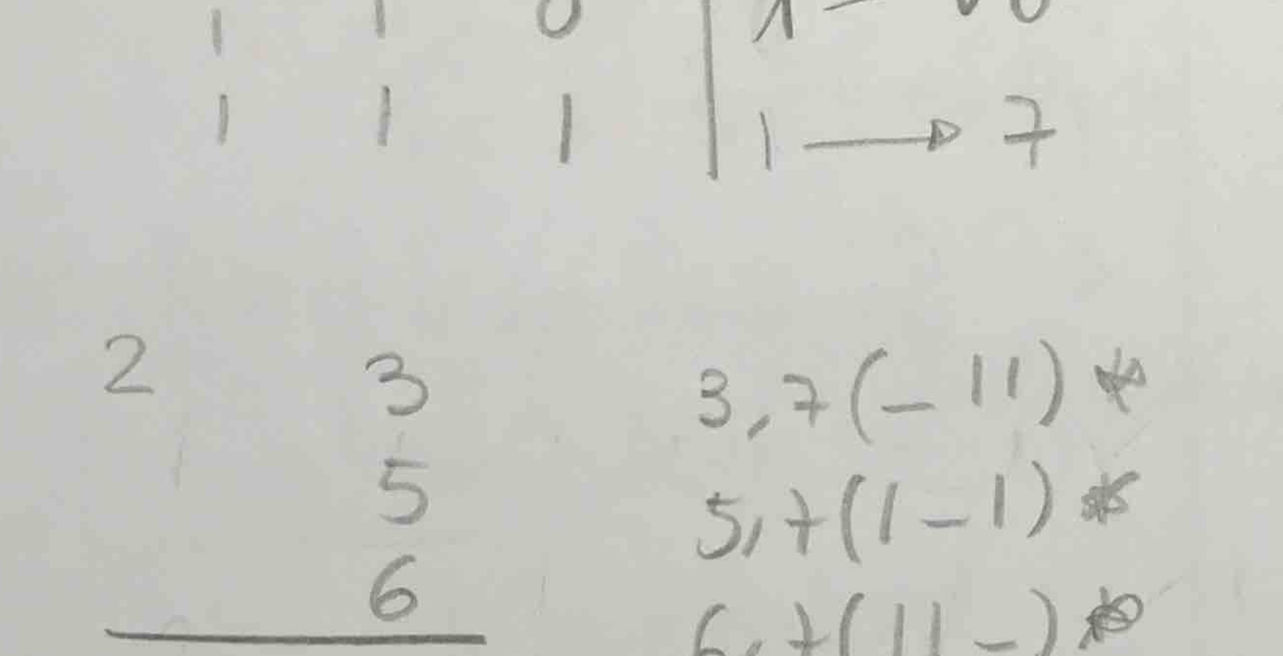
→ Forma normal disyuntiva

x	y	z	f
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1 → 3
1	0	0	0
1	0	1	1 → 5
1	1	0	1 → 6
1	1	1	1 → 7

$f(x,y,z) = \sum(3,5,6,7)$

2	3	
	5	
	6	
3	7	

3,7(-11) *
5,7(1-1) *
6,7(11-) *



Implicante	Patrón	Producto
3, 7	−11	bc
5, 7	1−1	ac
6, 7	11−	ab

$F = bc + ac + ab$

11. 4 bits $\langle a, b, c, d \rangle$

a dígito más significativo

$S = 1$ sii entrada es un nº primo.

	d	c	b	a	S
0	0	0	0	0	0
1	0	0	0	1	0
②	0	0	1	0	1
③	0	0	1	1	1
4	0	1	0	0	0
⑤	0	1	0	1	1
6	0	1	1	0	0
⑦	0	1	1	1	1
8	1	0	0	0	0
9	1	0	0	1	0
10	1	0	1	0	0
⑪	1	0	1	1	1
12	1	1	0	0	0
⑬	1	1	0	1	1
14	1	1	1	0	0
15	1	1	1	1	0

Forma normal disjuntiva:

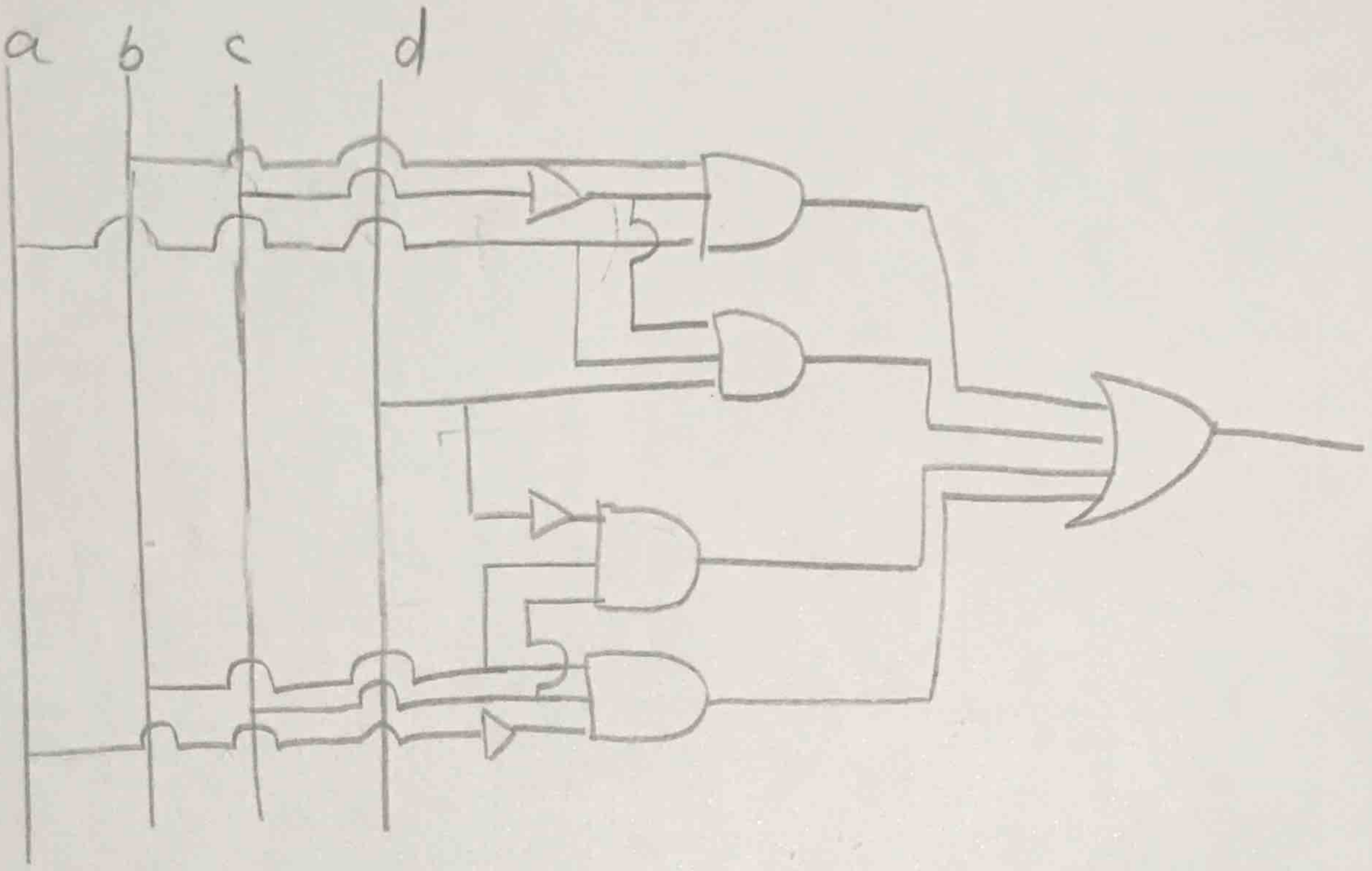
$S = \sum (2, 3, 5, 7, 11, 13)$

$S = \bar{a}\bar{b}\bar{c}d + a\bar{b}\bar{c}d + \bar{a}b\bar{c}d + abcd +$

$ab\bar{c}d + a\bar{b}cd$

ab \ dc	00	01	11	10
00	0	0	0	0
01	0	1	1	0
11	1	1	0	1
10	1	0	0	0

$$S = ab\bar{c} + a\bar{c}\bar{d} + bc\bar{d} + \bar{a}bc$$



12. 5 bits $\langle a, b, c, d, e \rangle$

a dígito más significativo

$S = 1$ sii entrada es un nº primo

5 bits ⟶ Tabla de la verdad de 32

Nº primos del 0 al 31 : 2, 3, 5, 7,
11, 13, 17, 19, 23, 29, 31,

Forma normal disyuntiva

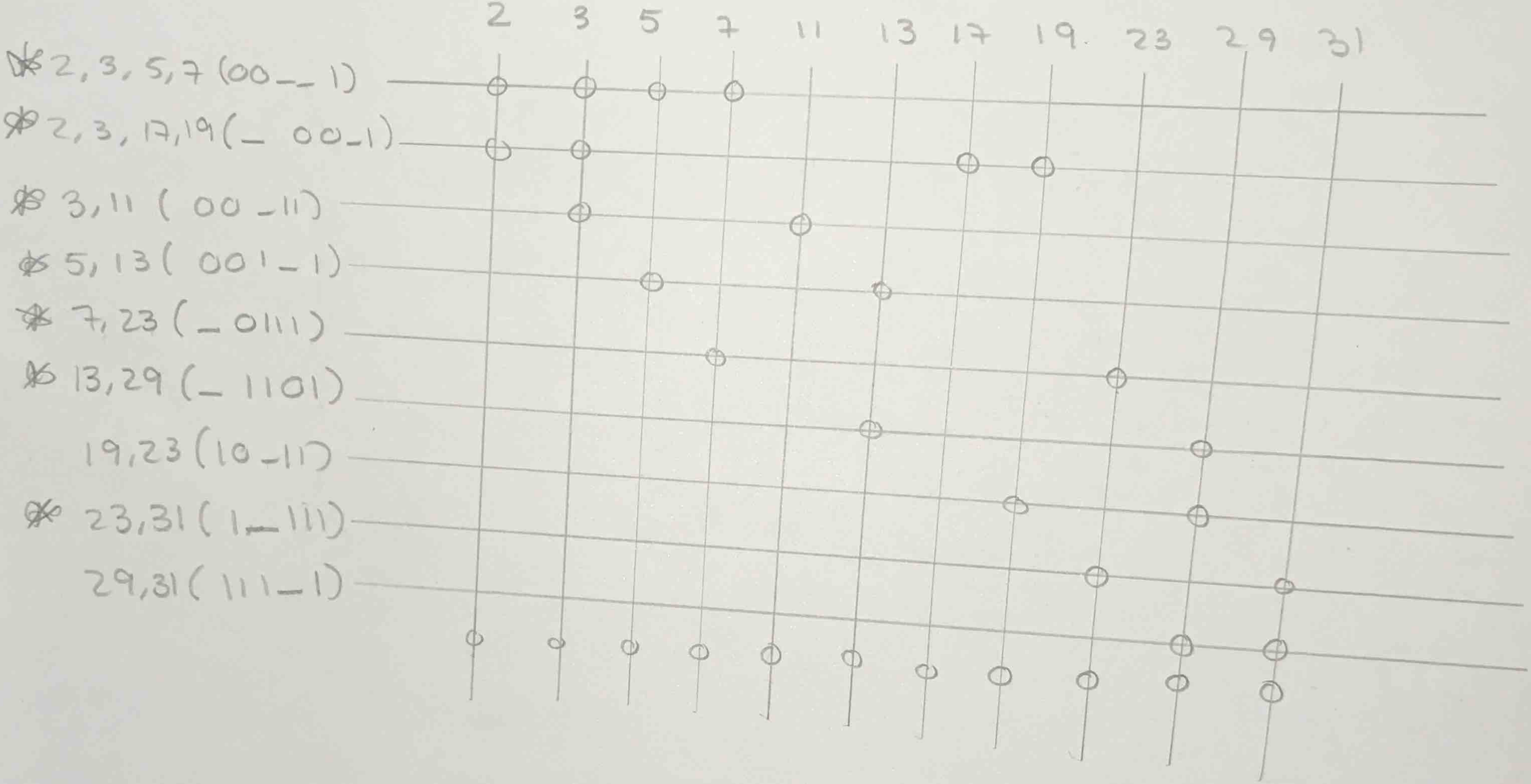
$S = \sum (2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31)$

ALGORITMO DE QUINE - McCUSKEY

2	00001 ✓	1 2	2,3(000-1) ✓
3	00011 ✓	2 3	2,5(00_01) ✓
5	00101 ✓	5	2,17(_0001) ✓
7	00111 ✓	17	3,7(00-11) ✓
11	01011 ✓	3 7	3,11(0-011) ✱
13	01101 ✓	11	3,19(_0011) ✓
17	10001 ✓	13	5,7(001-1) ✓
19	10011 ✓	19	5,13(0-101) ✱
23	10111	4 23	17,19(100_1) ✓
29	11101	29	13,29(-1101) ✱
31	11111	5 31	19,23(10_11) ✱
			23,31(1-111) ✱
			29,31(111-1) ✱

2,3,5,7(00--1) ✱

2,3,17,19(-00-1) ✱


2 3 5 7 11 13 17 19 23 29 31
2,3,5,7 (00--1)
2,3,17,19 (-00-1)
3,11 (00-11)
5,13 (001-1)
7,23 (-0111)
13,29 (-1101)
19,23 (10-11)
23,31 (1-111)
29,31 (111-1)

Implicante	Patrón e d c b a	Producto
2, 3, 5, 7	0 0 _ _ -1	$a\bar{d}\bar{e}$
2, 3, 17, 19	- 0 0 - 1	$a\bar{c}\bar{d}$
3, 11	0 - 0 11	$ab\bar{c}\bar{e}$
5, 13	0 - 101	$ab\bar{c}\bar{e}$
7, 23	- 0111	$abc\bar{d}$
13, 29	- 1101	$a\bar{b}cd$
23, 31	1 - 111	$abce$

$$S = a\bar{d}e + a\bar{c}\bar{d} + ab\bar{c}\bar{e} + a\bar{b}c\bar{e} + abc\bar{d} + a\bar{b}cd + abce$$