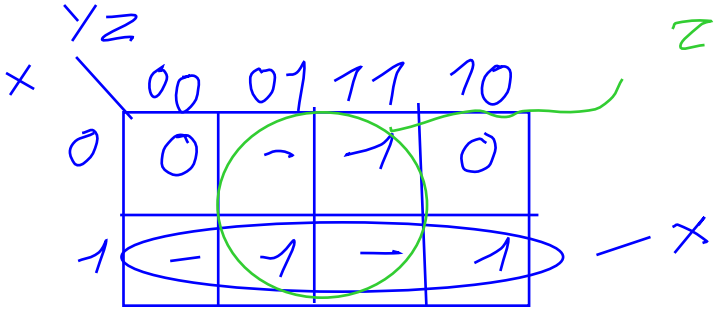
3) 3.1 $S(x,y,z)$

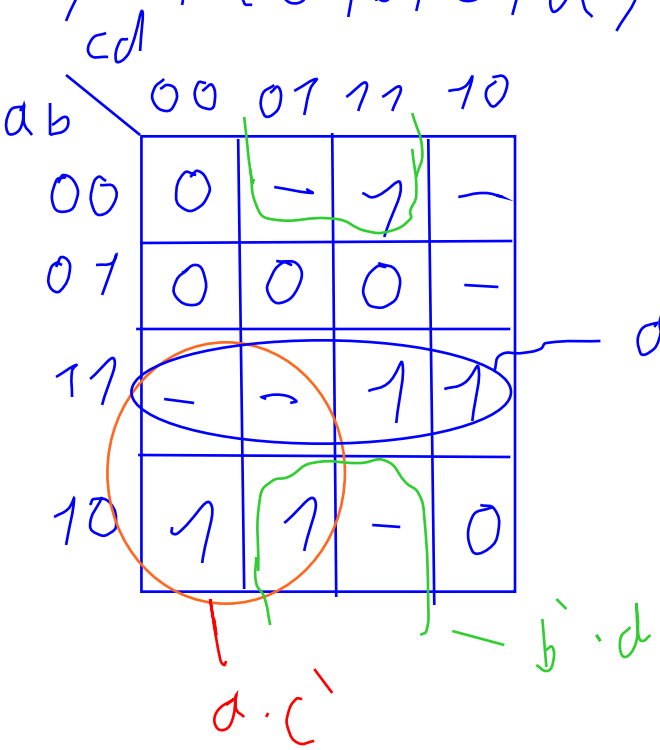
b) $= \sum(3,5,6(1,4,7)$



$S(x,y,z) = x + z$

c) $f(a,b,c,d) = \sum(3,8,9,14,15$

$(1,2,6,11,12,13))$



$f(a,b,c,d) = a \cdot b + a \cdot c' + b' \cdot d$

$= a \cdot (c' + b) + b' \cdot d$

e) $h(a,b,c,d) = \prod(0,1,2,3,10,15(6,11,12,14))$

ab \ cd	00	01	11	10
00	0	0	0	0
01	1	1	1	—
11	—	1	0	—
10	1	1	—	0

$(a+b)$

$(a'+c')$

$h(a,b,c,d) = (a+b)\cdot(a'+c')$

d) $g(a,b,c,d) = b'\cdot(a'+d') + a\cdot c' + a'\cdot b'\cdot(c+d)$

$= \underbrace{a'\cdot b'}_{(00--)} + \underbrace{b'\cdot d'}_{(-0-0)} + \underbrace{a\cdot c'}_{(1-0-)} + \underbrace{a'\cdot b'\cdot c}_{(001-)} + \underbrace{a'\cdot b'\cdot d}_{(00-1)}$

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

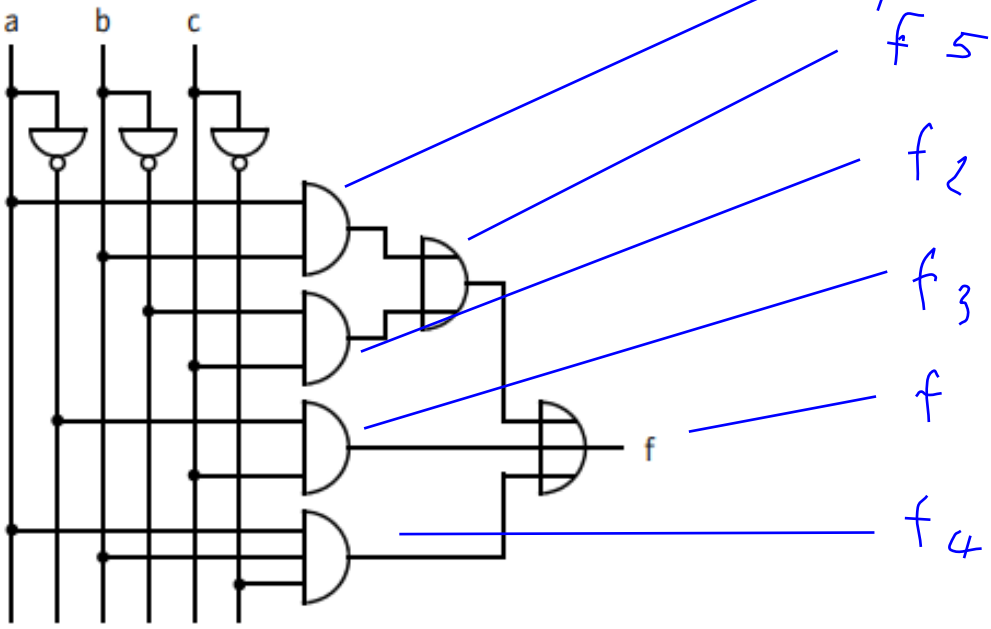
$a'\cdot b'$

$b'\cdot d'$

$a\cdot c'$

$g(a,b,c,d) = a\cdot c' + b'\cdot d' + a'\cdot b'$

3.2)



$f = f5 + f4 + f3$

$f1 = a \cdot b$

$f2 = b' \cdot c$

$f3 = a' \cdot c$

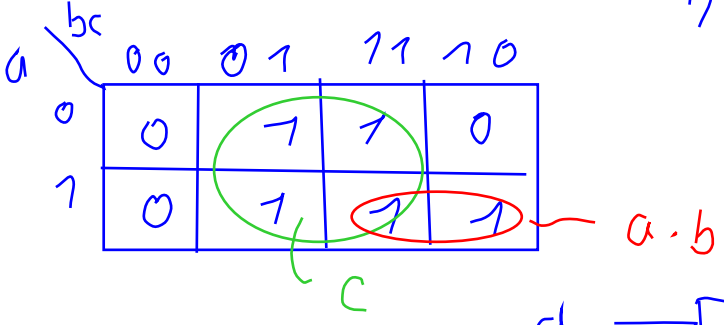
$f4 = a \cdot b \cdot c'$

$f5 = f1 + f2$

$= a \cdot b + b' \cdot c$

$f = a \cdot b + b' \cdot c + a \cdot b' \cdot c + a' \cdot c$

(11-) (-01) (101) (0-1)



$f(a,b,c) = a \cdot b + c$