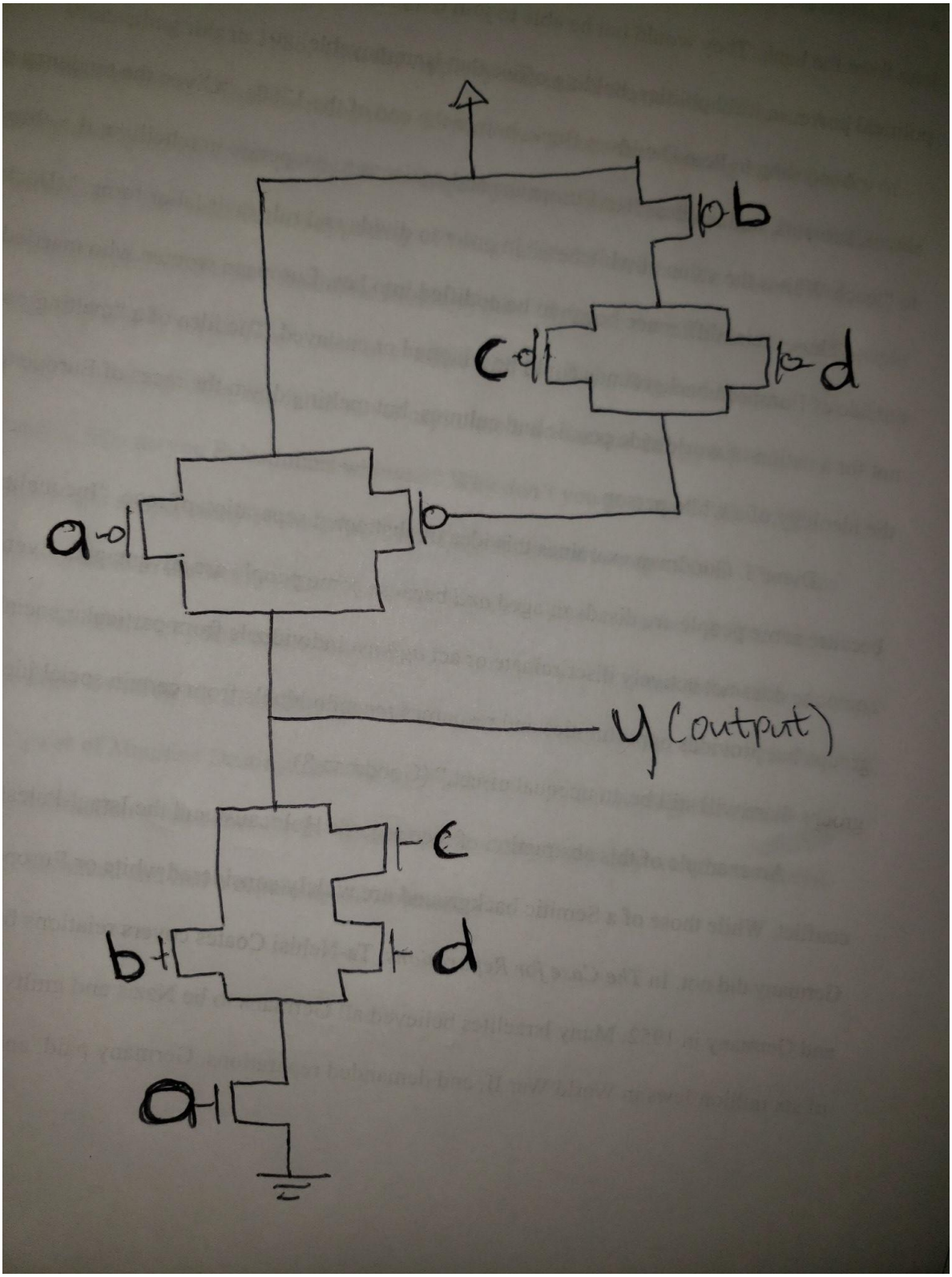
1) y(a, b, c, d) = [a(b + cd)]’



2)

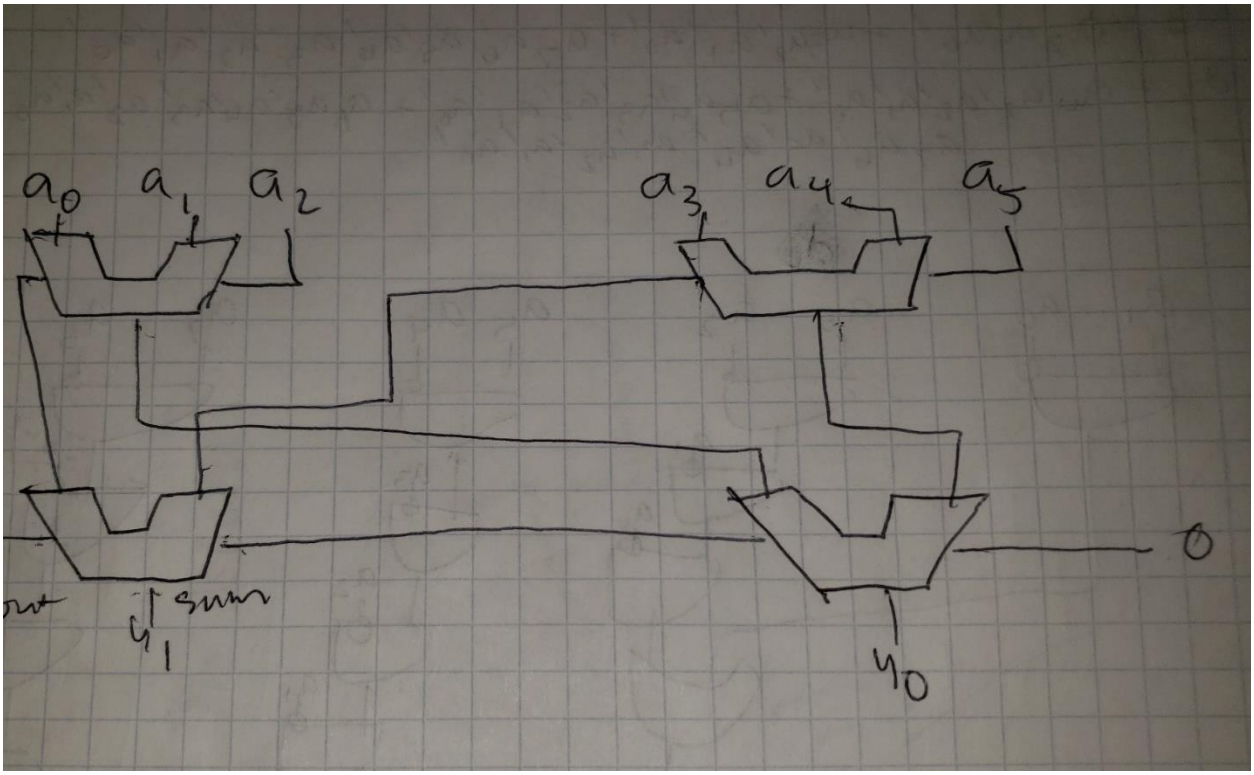
a5	a4	a3	a2	a1	a0		**y2**	**y1**	**y0**
0	0	0	0	0	0		**0**	**0**	**0**
0	0	0	0	0	1		**0**	**0**	**1**
0	0	0	0	1	0		**0**	**0**	**1**
0	0	0	0	1	1		**0**	**1**	**0**
0	0	0	1	0	0		**0**	**0**	**1**
0	0	0	1	0	1		**0**	**1**	**0**
0	0	0	1	1	0		**0**	**1**	**0**
0	0	0	1	1	1		**0**	**1**	**1**
0	0	1	0	0	0		**0**	**0**	**1**
0	0	1	0	0	1		**0**	**1**	**0**
0	0	1	0	1	0		**0**	**1**	**0**
0	0	1	0	1	1		**0**	**1**	**1**
0	0	1	1	0	0		**0**	**1**	**0**
0	0	1	1	0	1		**0**	**1**	**1**
0	0	1	1	1	0		**0**	**1**	**1**
0	0	1	1	1	1		**1**	**0**	**0**
0	1	0	0	0	0		**0**	**0**	**1**
0	1	0	0	0	1		**0**	**1**	**0**
0	1	0	0	1	0		**0**	**1**	**0**
0	1	0	0	1	1		**0**	**1**	**1**
0	1	0	1	0	0		**0**	**1**	**0**
0	1	0	1	0	1		**0**	**1**	**1**
0	1	0	1	1	0		**0**	**1**	**1**
0	1	0	1	1	1		**1**	**0**	**0**
0	1	1	0	0	0		**0**	**1**	**0**
0	1	1	0	0	1		**0**	**1**	**1**
0	1	1	0	1	0		**0**	**1**	**1**
0	1	1	0	1	1		**1**	**0**	**0**
0	1	1	1	0	0		**0**	**1**	**1**
0	1	1	1	0	1		**1**	**0**	**0**
0	1	1	1	1	0		**1**	**0**	**0**
0	1	1	1	1	1		**1**	**0**	**1**
1	0	0	0	0	0		**0**	**0**	**1**
1	0	0	0	0	1		**0**	**1**	**0**
1	0	0	0	1	0		**0**	**1**	**0**
1	0	0	0	1	1		**0**	**1**	**1**
1	0	0	1	0	0		**0**	**1**	**0**
1	0	0	1	0	1		**0**	**1**	**1**
1	0	0	1	1	0		**0**	**1**	**1**
1	0	0	1	1	1		**1**	**0**	**0**
1	0	1	0	0	0		**0**	**1**	**0**
1	0	1	0	0	1		**0**	**1**	**1**
1	0	1	0	1	0		**0**	**1**	**1**

1	0	1	0	1	1		**1**	**0**	**0**
1	0	1	1	0	0		**0**	**1**	**1**
1	0	1	1	0	1		**1**	**0**	**0**
1	0	1	1	0	1		**1**	**0**	**0**
1	0	1	1	1	0		**1**	**0**	**0**
1	0	1	1	1	1		**1**	**0**	**1**
1	1	0	0	0	0		**0**	**1**	**0**
1	1	0	0	0	1		**0**	**1**	**1**
1	1	0	0	1	0		**0**	**1**	**1**
1	1	0	0	1	1		**1**	**0**	**0**
1	1	0	1	0	0		**0**	**1**	**1**
1	1	0	1	0	1		**1**	**0**	**0**
1	1	0	1	1	0		**1**	**0**	**0**
1	1	0	1	1	1		**1**	**0**	**1**
1	1	1	0	0	0		**0**	**1**	**1**
1	1	1	0	0	1		**1**	**0**	**0**
1	1	1	0	1	0		**1**	**0**	**0**
1	1	1	0	1	1		**1**	**0**	**1**
1	1	1	1	0	0		**1**	**0**	**0**
1	1	1	1	0	1		**1**	**0**	**1**
1	1	1	1	1	0		**1**	**0**	**1**
1	1	1	1	1	1		**1**	**1**	**0**

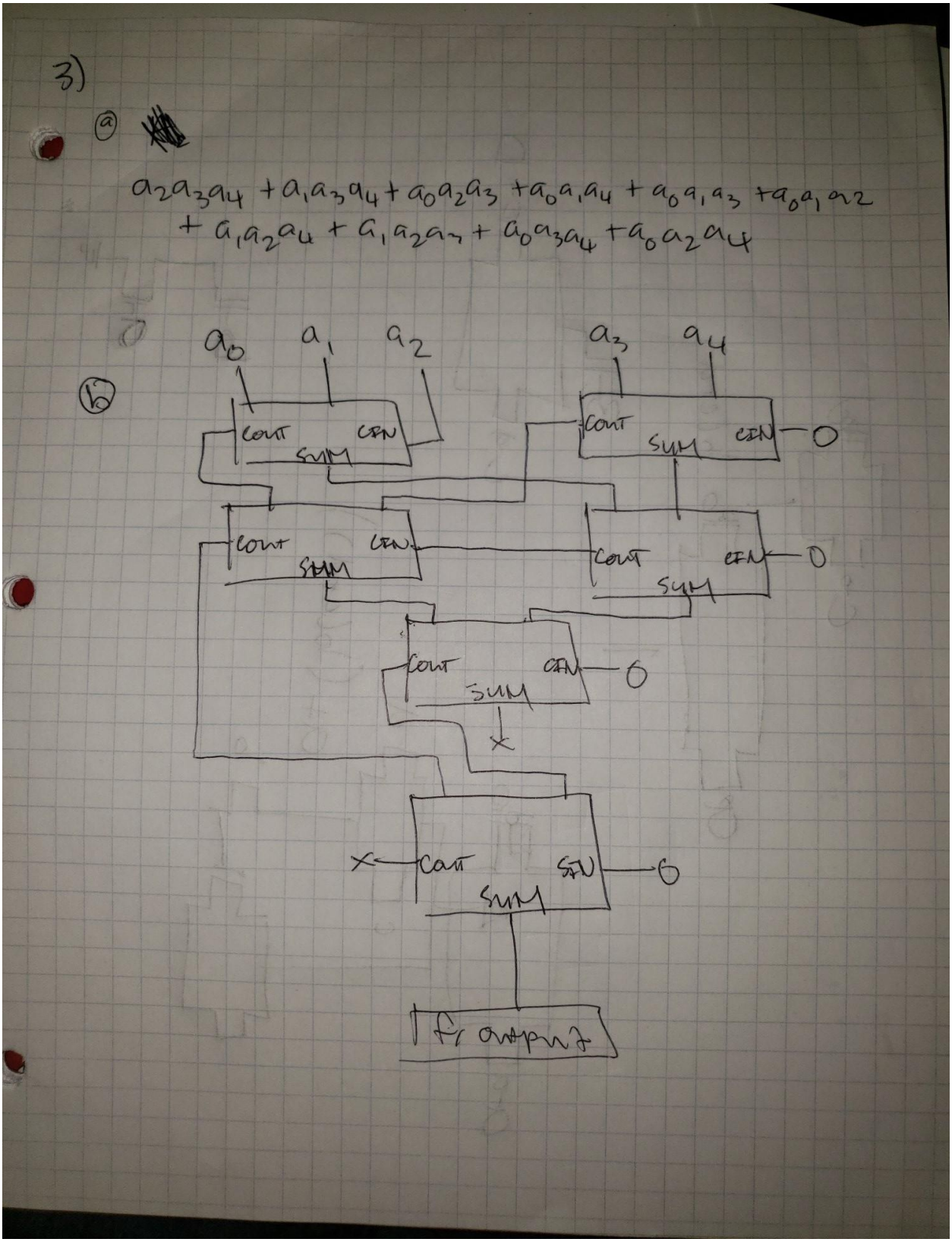
Y0 = a5’a4’a3a2’a1’a0’ + a5’a4’a3’a2’a1a0’ + a5’a4’a3’a2a1’a0’ + a5’a4’a3’a2a1a0 + a5’a4’a3a2’a1’a0’ + a5’a4’a3a2’a1a0 + a5a4’a3’a2’a1’a0’ + a5a4’a3’a2’a1a0 + a5a4’a3’a2a1’a0 + a5a4’a3’a2a1a0’ + a5a4’a3a2’a1’a0 + a5a4’a3a2’a1a0’ + a5a4’a3a2a1’a0’ + a5a4’a3a2a1a0 + a5’a4a3’a2’a1’a0’ + a5’a4a3’a2’a1a0 + a5’a4a3’a2a1’a0 + a5’a4a3’a2a1a0’ + a5’a4a3a2’a1’a0 + a5’a4a3a2’a1a0’ + a5’a4a3a2a1’a0’ + a5’a4a3a2a1a0 + a5a4a3’a2’a1’a0 + a5a4a3’a2’a1a0’ + a5a4a3’a2a1’a0’ + a5a4a3’a2a1a0 + a5a4a3a2’a1’a0’ + a5a4a3a2’a1a0 + a5a4a3a2a1’a0 + a5a4a3a2a1a0’

Y1 = a5’a4’a3’a1a0 + a5’a4’a3’a2a1 + a5’a4’a3a2’a0 + a5’a4’a3a2’a1 + a5’a4’a3a2a0’ + a5’a4’a2a1’a0 + a5a4’a3’a2a0’ + a5a4’a3a2’a1’ + a5a4’a2’a1a0’ + a5a4’a2’a1’a0 + a5a4’a3’a1’a0 + a5a4’a3’a2’a1 + a5’a4a3’a2a0’ + a5’a4a3a1’a0’ + a5’a4a2’a1a0’ + a5’a4a2’a1’a0 + a5’a4a3’a2’a0 + a5’a4a3’a1’a0 + a5a4a3’a2’a1’ + a5a4a3’a2’a0’ + a5a4a3’a1’a0’ + a5a4a2’a1’a0’ + a5a4a3a2a1a0

Y2 = a5’a4’a3a2a1a0 + a5a4’a2a1a0 + a5a4’a3a1a0 + a5a4’a3a2a0 + a5a4’a3a2a1 + a5’a4a2a1a0 + a5’a4a3a1a0 + a5’a4a3a2a0 + a5a4a3a2 + a5a4a1a0 + a5a4a2a0 + a5a4a3a0 + a5a4a2a1 + a5a4a3a1


a_0
a_1
a_2
a_3
a_4
a_5
0
sum
y_1
y_0

3)


3)
(a)
$a_2a_3a_4 + a_1a_3a_4 + a_0a_2a_3 + a_0a_1a_4 + a_0a_1a_3 + a_0a_1a_2 + a_1a_2a_4 + a_1a_2a_3 + a_0a_3a_4 + a_0a_2a_4$
(b)
a_0
a_1
a_2
a_3
a_4
COUT
CIN
SUM
0
x
for output

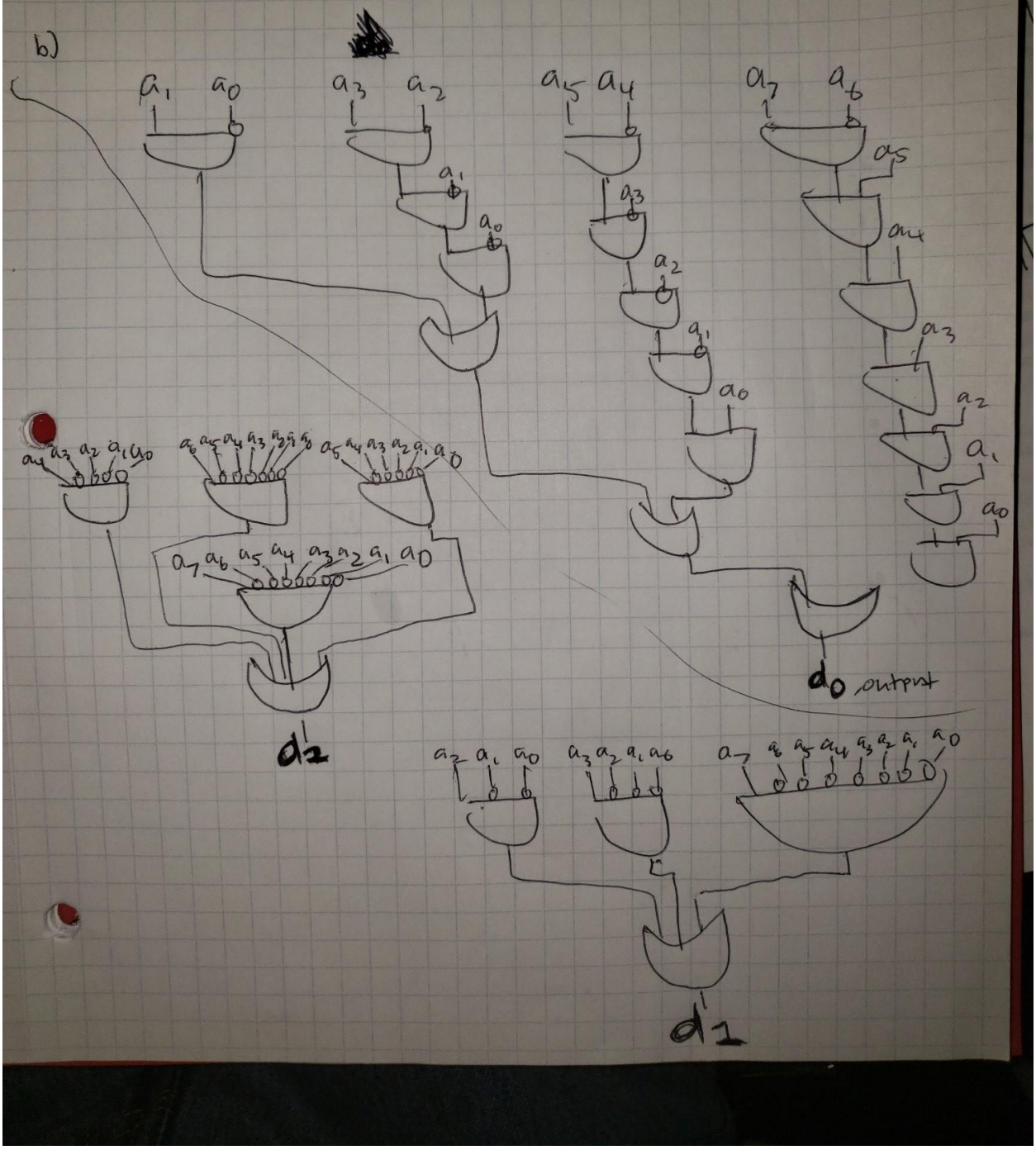
4)

a) $d_0 = a_1 a_0' + a_3 a_2' a_1' a_0' + a_5 a_4' a_3' a_2' a_1' a_0' + a_7 a_6' a_5' a_4' a_3' a_2' a_1' a_0'$

$d_1 = a_2 a_1' a_0' + a_3 a_2' a_1' a_0' + a_7 a_6' a_5' a_4' a_3' a_2' a_1' a_0'$

$d_2 = a_4 a_3' a_2' a_1' a_0' + a_5 a_4' a_3' a_2' a_1' a_0' + a_6 a_5' a_4' a_3' a_2' a_1' a_0' + a_7 a_6' a_5' a_4' a_3' a_2' a_1' a_0'$

b)



5)

1)

c \ ab	00	01	11	10
0	1	X	0	1
1	X	0	1	1

0 2 6 4

1 3 7 5

$f(a,b,c) = b' + ac$

2)

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

0 4 12 8

1 5 13 9

3 7 15 11

2 6 14 10

$f = a'bcd + acd + a'cd' + b'cd' + a'b'c$
$= a'bcd + acd + a'cd' + ab'c' + a'b'c$
$= a'bcd + acd + a'cd' + ac'd' + a'b'c$
$= a'bcd + acd + a'cd' + b'c'd' + b'cd$
$= a'bcd + acd + a'cd' + ab'c' + b'cd$
$= a'bcd + acd + a'cd' + ac'd' + b'cd$

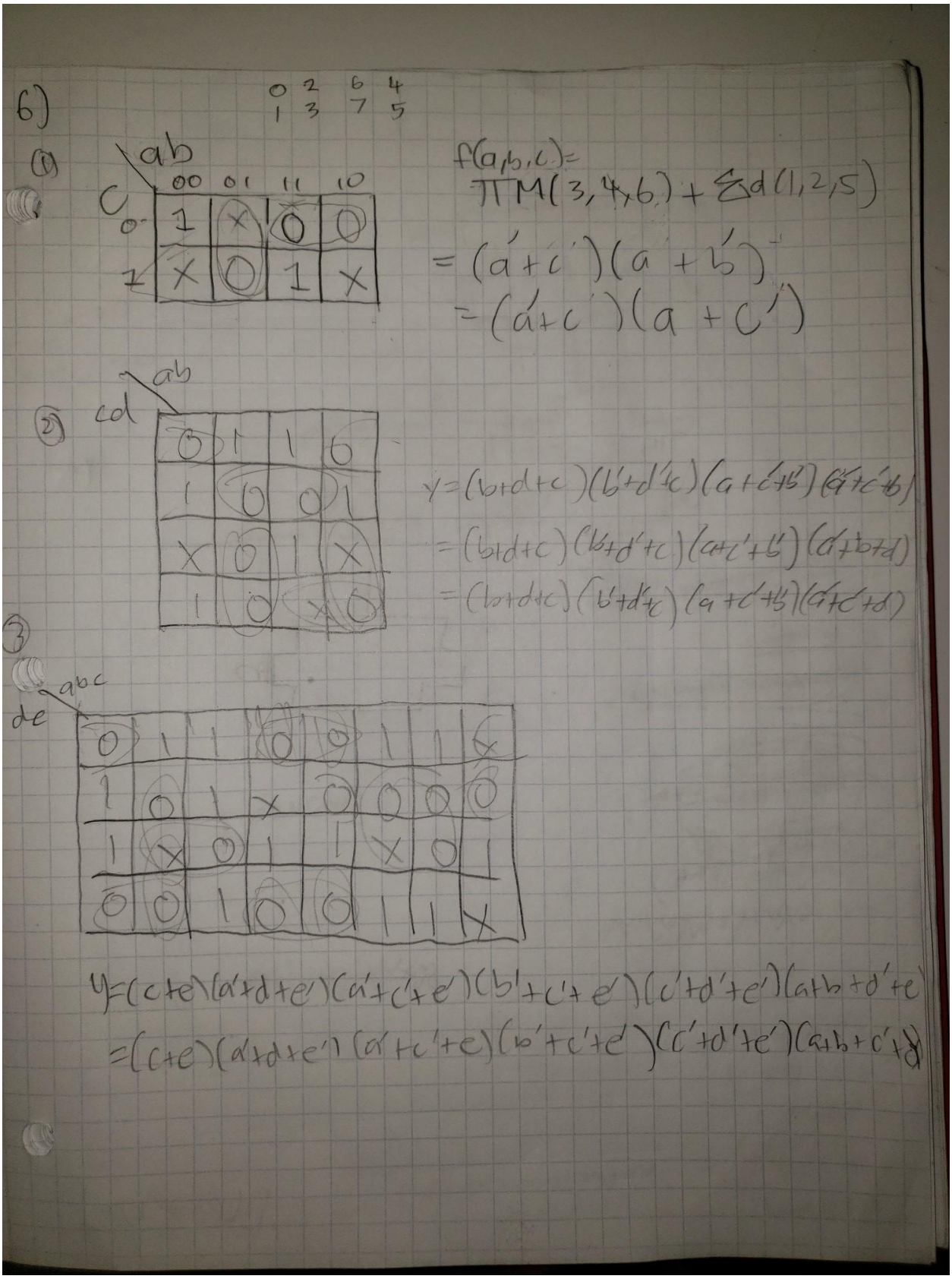
3)

de \ abc	000	001	011	010	100	101	110	111
00	X	0	1	1	1	0	X	1
01	0	0	1	X	0	1	X	0
11	0	1	0	0	0	0	1	0
10	X	1	0	1	X	1	0	1

$f = acd'e + c'e' + a'bd' + b'ed + bce + a'cde$

$= acd'e + c'e' + a'bd' + b'ed + bce + a'b'cd$

6)


6)
0 2 6 4
1 3 7 5
①
ab
00 01 11 10
c
0 1 X 0 0
1 X 0 1 X
f(a,b,c)=
ΠM(3,4,6) + Σd(1,2,5)
= (a'+c')(a+b')
= (a'+c')(a+c')
②
ab
cd
0 1 1 0
1 0 0 1
X 0 1 X
1 0 X 0
y=(b+d+c)(b'+d'+c)(a+c'+b')(a'+c'+b)
=(b+d+c)(b+d'+c)(a+c'+b')(a'+b+d)
=(b+d+c)(b'+d'+c)(a+c'+b')(a'+c'+d)
③
abc
de
0 1 1 0 0 1 1 X
1 0 1 X 0 0 0 0
1 X 0 1 1 X 0 1
0 0 1 0 0 1 1 X
y=(c+e)(a'+d+e')(a'+c'+e')(b'+c'+e')(c'+d'+e')(a+b+d'+e)
=(c+e)(a'+d+e')(a'+c'+e)(b'+c'+e')(c'+d'+e')(a+b+c'+d)