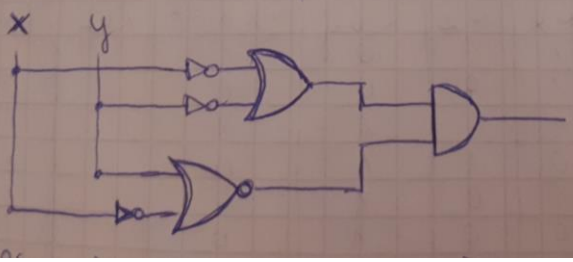
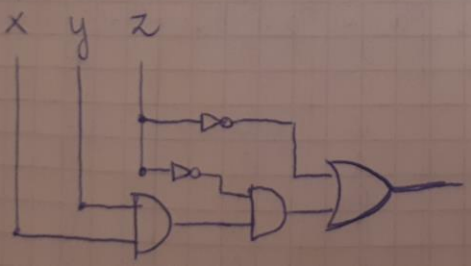
1.
a. $f(x,y) = (\sim x \cup \sim y) \cap \sim(y \cup \sim x)$

x	y	~x	~y	~x ∪ ~y	~(y ∪ ~x)	(~x ∪ ~y) ∩ ~(y ∪ ~x)
0	0	1	1	1	0	1
0	1	1	0	1	0	1
1	0	0	1	1	1	0
1	1	0	0	0	0	1



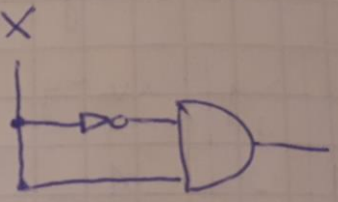
b. $f(x,y,z) = \sim z \cup (x \cap y \cap \sim z)$

x	y	z	~z	x ∩ y ∩ ~z	~z ∪ (x ∩ y ∩ ~z)
0	0	0	1	0	1
0	0	1	0	0	0
0	1	0	1	0	1
1	0	0	1	0	1
0	1	1	0	0	0
1	0	1	0	0	0
1	1	0	1	1	1
1	1	1	0	0	0



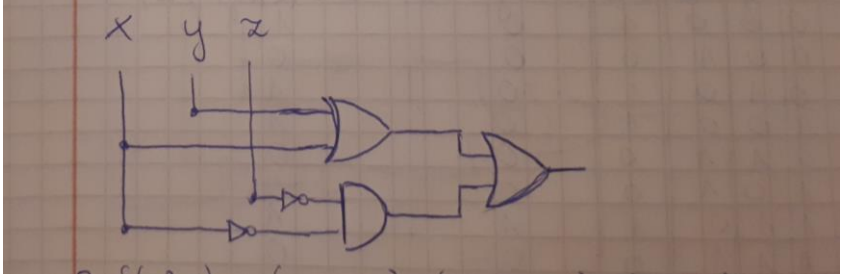
c. $f(x) = \sim x \cap x$

x	~x	~x ∩ x
0	1	0
1	0	0

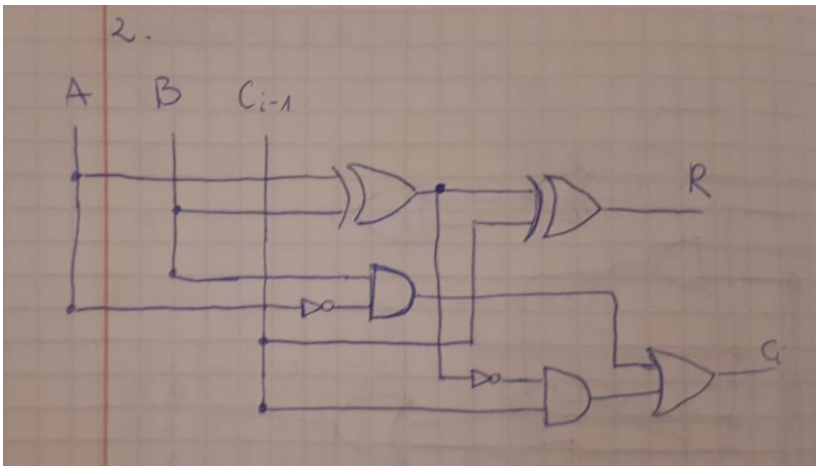


d. $f(x,y,z) = x \vee y \vee (\neg x \wedge \neg z)$

x	y	z	¬x	¬z	x ∨ y	¬x ∧ ¬z	x ∨ y ∨ (¬x ∧ ¬z)
0	0	0	1	1	0	1	1
0	0	1	1	0	0	0	0
0	1	0	1	1	1	1	1
1	0	0	0	1	1	0	1
0	1	1	1	0	1	0	1
1	0	1	0	0	1	0	1
1	1	0	0	1	1	0	1
1	1	1	0	0	1	0	1



2.



3. $f(a,b,c) = \neg(a \wedge b \wedge c) \wedge (\neg a \vee \neg b \vee c) \wedge (a \wedge \neg c) \wedge (a \vee \neg b \vee c)$

a	b	c	① a ∧ b ∧ c	② a ∨ ¬b ∨ c	③ a ∧ ¬c	④ a ∨ ¬b ∨ c	¬① ∧ ② ∧ ③ ∧ ④
0	0	0	0	1	0	1	0
0	0	1	0	1	0	1	0
0	1	0	0	1	0	0	0
1	0	0	0	1	1	1	1
0	1	1	0	1	0	1	0
1	0	1	0	1	0	1	0
1	1	0	0	0	1	1	0
1	1	1	1	1	0	1	0