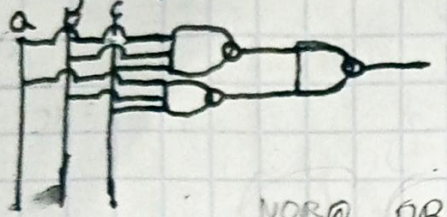
Zadanie domowe

$f(a,b,c) = (a \cap b \cap c) \cup (a \cap b \cap c) \cup (a \cap b \cap c)$

$f(a,b,c) = (a \cap b \cap c)$

a	b	c	AND $a \cap b \cap c$
0	0	0	0
0	0	1	0
0	1	1	0
0	1	0	0
1	1	0	0
1	1	1	1
1	0	1	0
1	0	0	0

a) $f(a,b,c) = \sim(\sim(a \cap b \cap c) \cap \sim(a \cap b \cap c))$



a	b	c	① $\sim(a \cap b \cap c)$	② NAND	AND ③ = ① ∩ ②
0	0	0	1	1	0
0	0	1	1	1	0
0	1	1	1	1	0
0	1	0	1	1	0
1	1	0	1	1	0
1	1	1	0	0	1
1	0	1	1	1	0
1	0	0	1	1	0

b)

a	b	c	NOR ① $\sim(a \cup b \cup c)$	OR ② ① ∪ ①	NOR ③ = NOT $\sim(a \cup a)$	NOT ④ $\sim(b \cup b)$	NOT ⑤ $\sim(c \cup c)$	NOR ⑥ ③ ∪ ④ ∪ ⑤
0	0	0	1	0	1	1	1	0
0	0	1	0	1	1	1	0	0
0	1	1	0	1	1	0	0	0
0	1	0	0	1	1	0	1	0
1	1	0	0	1	0	0	1	0
1	1	1	0	1	0	0	0	1
1	0	1	0	1	0	1	0	0
1	0	0	0	1	0	1	1	0

$\sim(a \cup b)$ NOR

NOR NOT

$\sim(a \cup a) = \sim a$

$\sim(\sim a \cup \sim b \cup \sim c) = \sim(\sim a) \cap \sim(\sim b) \cap \sim(\sim c) = a \cap b \cap c$

$a \cup a = a$

$a \cap a = a$

$a \cup 0 = a$

$a \cup 1 = 1$

$a \cap 1 = a$

$a \cap 0 = 0$

$\sim(a \cup b) = (\sim a) \cap (\sim b)$

$\sim(a \cap b) = \sim a \cup \sim b$

$f(a,b,c) = \sim(\sim(a \cup a) \cup \sim(b \cup b) \cup \sim(c \cup c))$