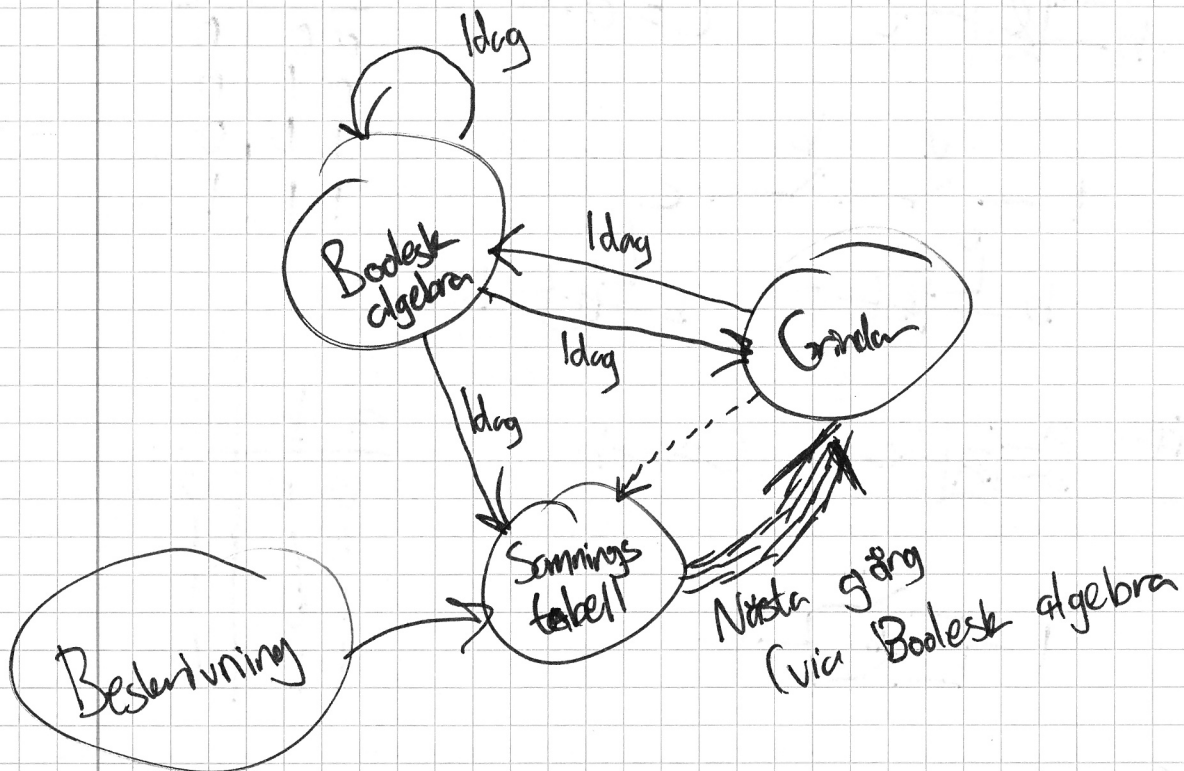
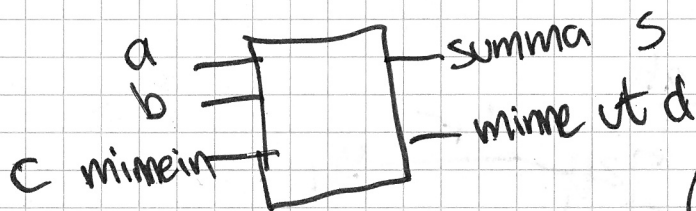


Grindar och Boolesk algebra.



1 \Leftrightarrow sant \Leftrightarrow hög spänning
 0 \Leftrightarrow falskt \Leftrightarrow låg spänning

Sannings tabell heladderare



(ordningslös
 ordning,
 men
 "sorterat"
 svårt)

a	b	c	s	d
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

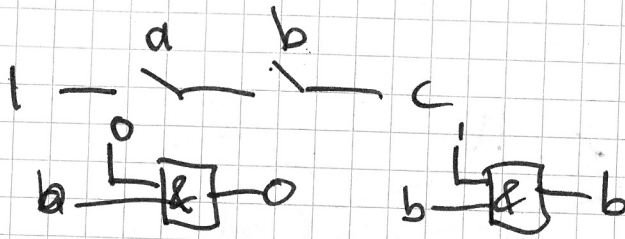
Grindar

OCH
AND



$$C = a \cdot b$$

a	b	c
0	0	0
0	1	0
1	0	0
1	1	1

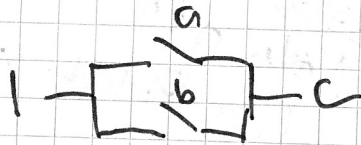


ELLER
OR



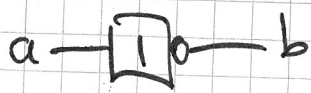
$$C = a + b$$

a	b	c
0	0	0
0	1	1
1	0	1
1	1	1



INVERTERARE

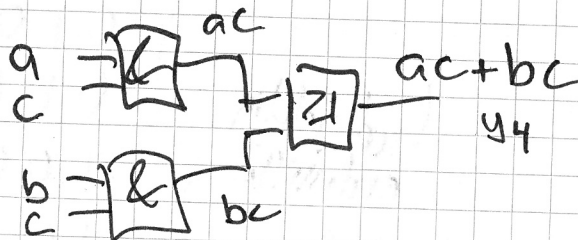
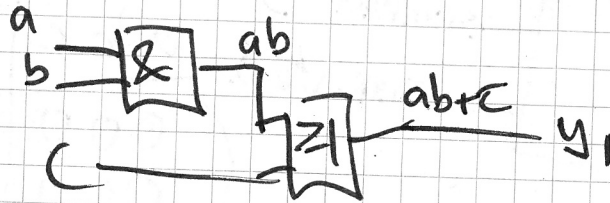
ICKE
NOT



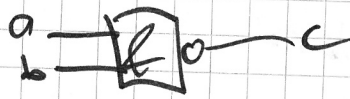
$$b = a'$$

a	b
0	1
1	0

2.1 a)

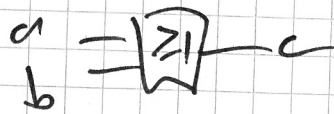


NAND



$$c = (ab)'$$

NOR



$$c = (a+b)'$$

XOR

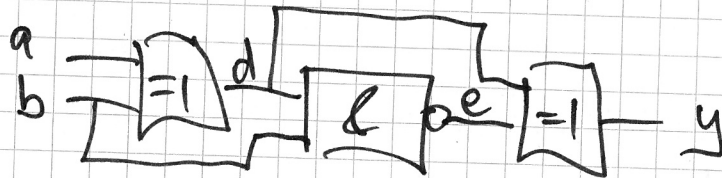


Exklusiv eller

$$c = a \oplus b$$

a	b	c
0	0	0
0	1	1
1	0	1
1	1	0

2.3 a)



$$((a \oplus b) b)' \oplus (a \oplus b)$$

$$d = a \oplus b$$

$$e = (db)'$$

$$y = d \oplus e$$

b)

a	b	d	e	f
0	0	0	1	1
0	1	1	0	1
1	0	1	1	0
1	1	0	1	1

Boolesk algebra

Axiom

$$0+0=0$$

$$1 \cdot 1 = 1$$

$$1+1=1$$

$$0 \cdot 0 = 0$$

$$0+1=1=1+0$$

$$1 \cdot 0 = 0 = 0 \cdot 1$$

$$0' = 1$$

$$1' = 0$$

Enn variabel

$$\left. \begin{array}{l} x+x=x \\ x \cdot x=x \end{array} \right\} \text{Idempotent}$$

$$x+x'=1$$

$$x \cdot x' = 0$$

$$x+1 = 1$$

$$x \cdot 0 = 0$$

$$x+0 = x$$

$$x \cdot 1 = x$$

$$(x')' = x$$

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

$$x(yz) = (xy)z$$

} Associativ

$$x+y = y+x$$

$$xy = yx$$

} Kommutativ

$$x(y+z) = xy + xz$$

$$x+yz = (x+y)(x+z)$$

} Distributiva

$$x + xy = x$$

$$x(x+y) = x$$

} Absorption

$$xy + x'z = xy + x'z + yz$$

$$(x+y)(x'+z) = (x+y)(x'+z)(y+z)$$

} Consensus

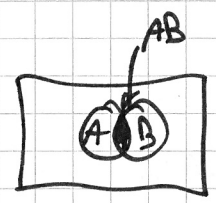
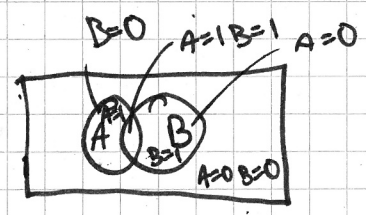
$$(x+y)' = x'y'$$

$$(xy)' = x'+y'$$

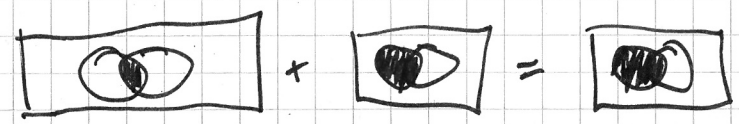
} De Morgan ←

Venn diagram

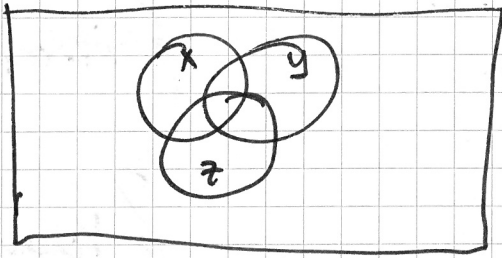
Sätt att beskriva logiska mängder
(enkelt att se logor...)



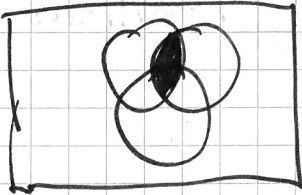
Fyll området som uttrycket beskriver



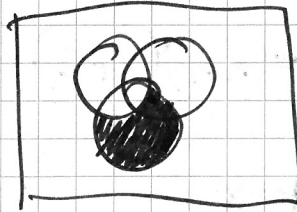
Consensus



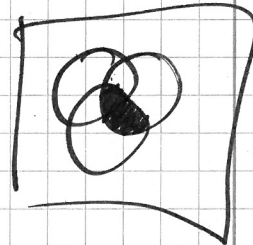
xy



$x'z$



yz



3.1. d) $ab' + abc =$
 $a(b' + bc) =$
 $a((b' + b)(b' + c)) =$
 $a(b' + c)$

b) $a'c'd + acd$
i) $(a+b')(a'+b)(a+b)$