Tutorium

1. Beweisen Sie das Absorptionsgesetz

$$a \wedge (a \vee b) = a$$

auf 2 Arten

2. S 54 Nr. 1

3. S 61 Nr. 1 + 2

$a \wedge (a \vee b) = a$

a	w	w	F	F
b	w	F	w	F
$a \vee b$	w	w	w	F
I: $a \wedge (a \vee b)$	w	w	F	F
$I \Leftrightarrow a$	w	w	w	w

$E[A] = Bool^2$

$\downarrow$

Tautologie

$a \wedge (a \vee b) \Leftrightarrow a$

Äquivalenz

da Endlosschleife

$\Leftrightarrow$ neutrales Objekt?

$$
\begin{aligned}
& a \wedge (a \vee b) \\
& \quad \text{neutral erweitert} \\
& (a \vee F) \wedge (a \vee b) \\
& \quad \text{distrib.} \\
& a \vee (F \wedge b) \\
& \quad \text{übergewicht} \\
& a \vee F \\
& \quad \text{neutral} \\
& a
\end{aligned}
$$

S 54 Nr. 1)

$$\left.\begin{array}{ll} \underline{\mathrm{I}}: & \neg(h \wedge e) \rightarrow \neg f \\ \underline{\mathrm{II}}: & e \vee \neg f \rightarrow \neg h \\ \underline{\mathrm{III}}: & e \vee f \vee h \end{array}\right\} \wedge$$

$$E[A] = \{(\underset{h}{\overset{\uparrow}{F}}\ \underset{e}{\overset{\uparrow}{W}}\ \underset{f}{\overset{\uparrow}{F}})\} \Rightarrow \text{Esmeralda war's}$$

h	w	w	w	w	F	F	F	F
e	w	w	F	F	w	w	F	F
f	w	F	w	F	w	F	w	F
$\neg(h \wedge e)$	F	F	w	w	w	w	w	w
I: $\neg(h \wedge e) \to \neg f$	w	w	F	w	F	w	F	w
$e \vee \neg f$	w	w	F	w	w	w	F	w
II: $e \vee \neg f \to \neg h$	F	F	w	F	w	w	w	w
III $e \vee f \vee h$	w	w	w	w	w	w	w	F
$\overline{I} \wedge \overline{II} \wedge \overline{III}$	F	F	F	F	F	w	F	F

SGN Ar 1)a)

a	W	W	W	W	F	F	F	F
b	W	W	F	F	W	W	F	F
c	W	F	W	F	W	F	W	F
I: $\neg a \rightarrow b$	W	W	W	W	W	W	F	F
$a \wedge \neg c$	F	W	F	W	F	F	F	F
II $a \wedge \neg c \leftrightarrow b$	F	W	W	F	F	F	W	W
$I \wedge II$	F	W	W	F	F	F	F	F

KNF: $(\neg a \vee \neg b \vee \neg c) \wedge (\neg a \vee b \vee c) \wedge (a \vee \neg b \vee \neg c)$
$\wedge\ (a \vee \neg b \vee c) \wedge (a \vee b \vee \neg c) \wedge (a \vee b \vee c)$

DNF: $(a \wedge b \wedge \neg c) \vee (a \wedge \neg b \wedge c)$

2)

$$[(a \vee b) \vee c] \wedge [(a \vee b) \vee \neg c] \wedge [(\neg a \vee b) \vee \neg c]$$

distributiv

$$(a \vee b) \vee (c \wedge \neg c)$$

Komplement

$$(a \vee b) \vee F$$

$$a \vee b$$

neutral

$$(a \vee b) \wedge (\neg a \vee b \vee \neg c)$$

$$b \vee [a \wedge (\neg a \vee \neg c)]$$

$$b \vee [\underbrace{(a \wedge \neg a)}_{F} \vee (a \wedge \neg c)] \quad \Big\} \; b \vee (a \wedge \neg c)$$