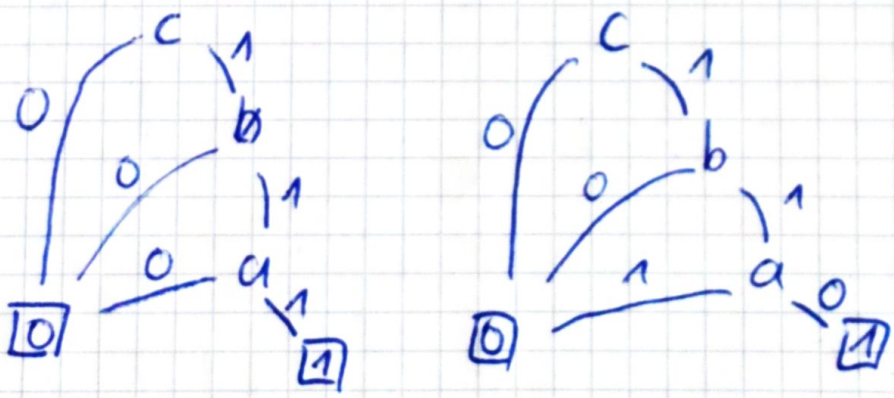
5.1k

								e
				c				
		a				a		
	1	0	1	1	1	1	1	1
b	1	0	0	1	1	0	0	0
	0	0	0	1	1	0	0	1
d	1	1	1	1	1	1	0	1

5.4K a) Die Variablenreihenfolge ist offensichtlich c, b, a, denn in dem Funktionskopf sind sie auch so herum aufgezählt.
Außerdem ist anhand der Pfadlänge von 1 bei jeden $c=1$ zu sehen, dass c am Anfang der Variablenreihenfolge stehen muss. Bei b analog dazu.

b) 1. $\bar{c}\bar{b}a$ 2. $\bar{c}\bar{b}\bar{a}$, ersichtlich aus c)

c)



1a)

d \ b	$\bar{a}$	a	ac
$\bar{d}$	0	1	- 0
d	1	0	1 1
d	-	0	0 1
$\bar{d}$	1	0	0 0

DNF: $\bar{a}b \vee a\bar{b}c\bar{d} \vee ab\bar{c}\bar{d} \vee \bar{a}\bar{b}\bar{c}d$

b)

d \ b	$\bar{a}$	a	c
$\bar{d}$	1	0	- 1
d	0	1	0 0
d	-	1	1 0
$\bar{d}$	0	1	1 1

KNF: $\neg(\bar{a}\bar{b}\bar{c}\bar{d}) \vee (ad) \vee (\bar{a}\bar{b}c) \vee (ab\bar{c}\bar{d})$

$\Leftrightarrow (a \vee b \vee c \vee d) \wedge (\bar{a} \vee \bar{d}) \wedge (a \vee b \vee \bar{c}) \wedge (\bar{a} \vee \bar{b} \vee c \vee d)$

3a) $\bar{a}\bar{b}\bar{c}\bar{d}$ (0000)

$a\bar{b}\bar{c}d$ * (1001)
$ab\bar{c}\bar{d}$ * (0011)
$\bar{a}\bar{b}cd$ * (1100)

$abcd$ * (1110)
$ab\bar{c}d$ * (1101)
$\bar{a}bcd$ * (0111)

$abcd$ * (1111)

$a\bar{c}d$ (1-01)
$abc\bar{c}$ * (110-)
$abd\bar{d}$ * (11-0)
$\bar{a}cd$ (0-11)

abc * (111-)
abd * (11-1)
bcd (-111)

ab (11--)

⇒ Primimplikanten: $\bar{a}bc\bar{d}$, $a\bar{c}d$, $\bar{a}cd$, bcd, ab

b)

	$\bar{a}\bar{b}\bar{c}\bar{d}$	$a\bar{b}\bar{c}\bar{d}$	$ab\bar{c}\bar{d}$	$\bar{a}b\bar{c}\bar{d}$	$abc\bar{d}$	$ab\bar{c}d$	$\bar{a}bcd$	$abcd$
$\bar{a}\bar{b}\bar{c}\bar{d}$	*							
$a\bar{c}\bar{d}$		*				*		
$\bar{a}c\bar{d}$				*			*	
$b\bar{c}\bar{d}$							*	*
ab			*		*			*

$\Rightarrow$ Kern-Primimplikanten:

$\bar{a}\bar{b}\bar{c}\bar{d}$, $a\bar{c}\bar{d}$, $\bar{a}c\bar{d}$, ab

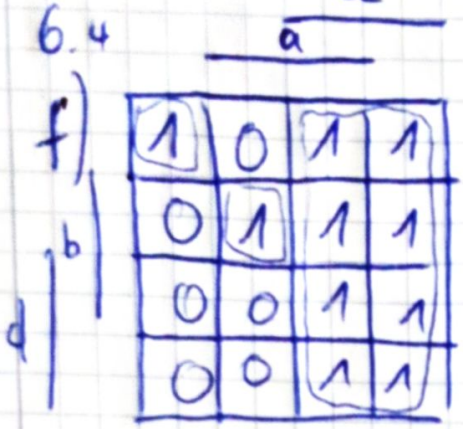
c) $(\bar{a}\bar{b}\bar{c}\bar{d}) \vee (a\bar{c}\bar{d}) \vee (\bar{a}c\bar{d}) \vee (ab)$

d)

d \ b \ a c	$\bar{a}\bar{c}$	$\bar{a}c$	ac	$a\bar{c}$
$\bar{b}$	1	0	0	0
b	0	1	1	0
b	0	1	1	1
$\bar{b}$	0	1	0	1

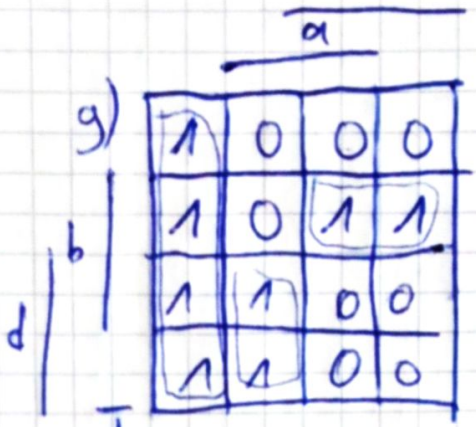
6.4

f)



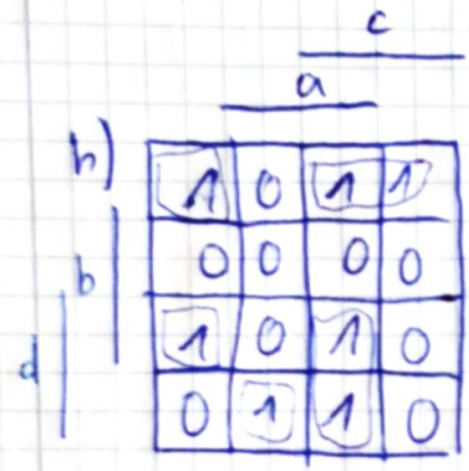
DNF: $c \vee (\bar{a}\bar{b}\bar{c}\bar{d}) \vee (ab[illegible])$

g)

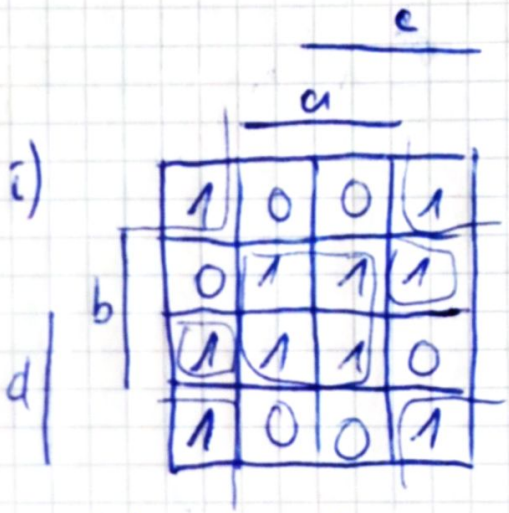


DNF: $(bc\bar{d}) \vee (da\bar{c}) \vee (\bar{a}\bar{c})$

h)



i)



DNF: $(c\bar{b}\bar{d}) \vee (acd) \vee (\bar{a}\bar{b}c\bar{d}) \vee (\bar{a}b\bar{c}d) \vee (a\bar{b}\bar{c}d)$

DNF: $(\bar{a}\bar{b}) \vee (ab) \vee (\bar{a}b\bar{c}\bar{d}) \vee (\bar{a}bcd)$