3e4.2 4.2

T2:

X	X + 1	=	1
0	1	=	1
1	1	=	1

T3:

X	X + X	=	X
0	0	=	0
1	1	=	1

3e4.3 4.3

T3′

X	X·X	=	X
0	0	=	0
1	1	=	1

3e4.4 4.4

T6

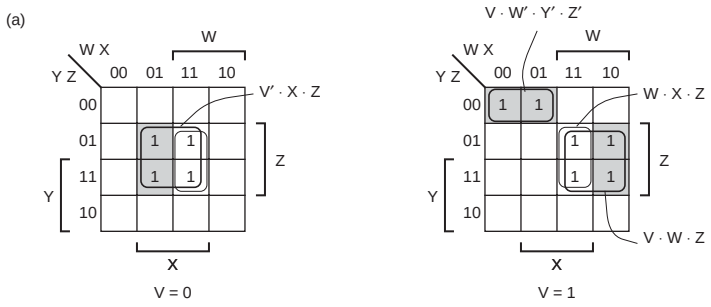
X	Y	X + Y	=	Y + X
0	0	0	=	0
0	1	1	=	1
1	0	1	=	1
1	1	1	=	1

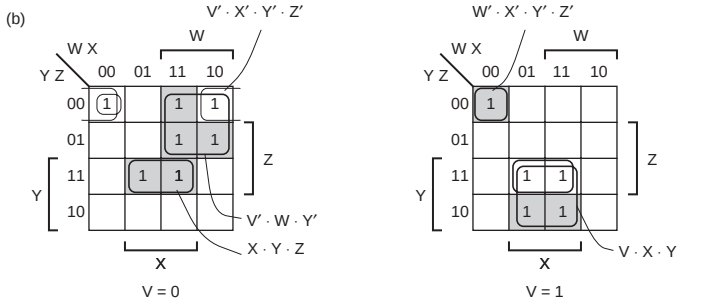
3e4.39 4.34

(a) True. If $A \cdot B = 0$ then either $A = 0$ or $B = 0$. If $A + B = 1$ then either $A = 1$ or $B = 1$. Therefore, $A, B = 0, 1$ or $1,0$, and $A = B'$.

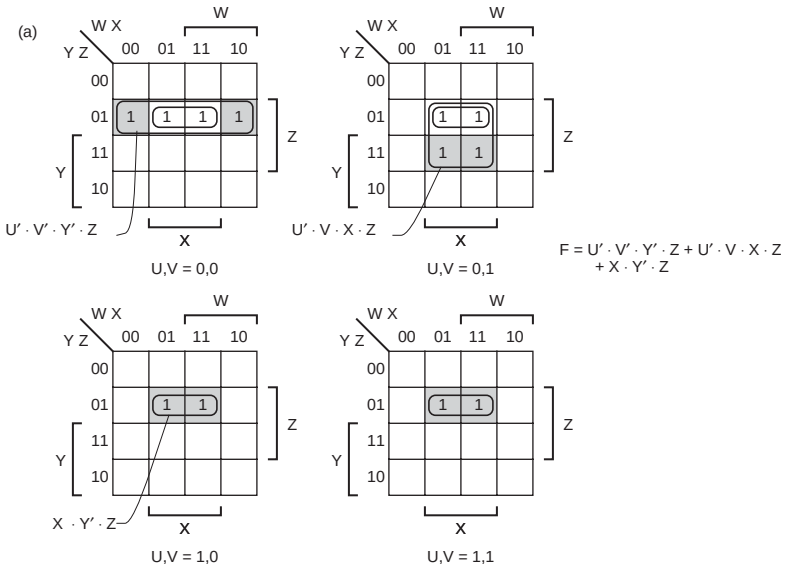
3e4.58 4.50 (a) 16 ns. (c) 18 ns. (d) 10 ns.

3e4.72 4.59





3e4.74 4.60



3e4.83 4.61 The name of the circuit comes from its output equation, F = 2B OR NOT 2B. On the falling edge of 2B, this circuit generates a negative pulse on F. Note that this is typically an unreliable way to generate a pulse because the width of the pulse depends on the inverter delays, which in turn depend on electrical characteristics that vary with voltage, temperature, and the IC manufacturing process.