

Övningsexempel på karnaughdiagram

Tag fram minimala SP-uttryck ur karnaughdiagrammen nedan! (Ettorna!)

		ZW				
		00	01	11	10	
xy	f ₁	00	1	0	0	1
		01	0	1	1	0
		11	0	1	1	0
		10	1	0	0	1

f₁ =

		ZW				
		00	01	11	10	
xy	f ₂	00	1	1	1	1
		01	0	1	1	0
		11	0	0	0	0
		10	0	0	0	0

f₂ =

		ZW				
		00	01	11	10	
xy	f ₃	00	1	0	0	1
		01	1	1	1	1
		11	1	1	1	1
		10	1	0	0	1

f₃ =

		ZW				
		00	01	11	10	
xy	f ₄	00	0	1	1	0
		01	0	1	1	1
		11	0	1	1	1
		10	0	0	0	0

f₄ =

		ZW				
		00	01	11	10	
xy	f ₅	00	1	1	1	1
		01	1	1	1	1
		11	0	0	0	0
		10	0	1	1	0

f₅ =

		ZW				
		00	01	11	10	
xy	f ₆	00	1	1	1	1
		01	1	1	1	1
		11	1	1	1	1
		10	1	0	0	1

f₆ =

		ZW				
		00	01	11	10	
xy	f ₇	00	1	0	0	1
		01	1	1	1	1
		11	0	1	1	0
		10	1	0	0	1

f₇ =

		ZW				
		00	01	11	10	
xy	f ₈	00	1	0	0	1
		01	0	1	1	0
		11	0	1	1	0
		10	1	1	1	1

f₈ =

		ZW				
		00	01	11	10	
xy	f ₉	00	1	0	0	1
		01	0	1	0	0
		11	0	0	1	0
		10	1	0	0	1

f₉ =

Svar:

$$f_1 = y'w' + yw$$

$$f_4 = x'w + yw + yz$$

$$f_7 = y'w' + yw + x'y$$

alternativt

$$f_7 = y'w' + yw + x'w'$$

$$f_2 = x'y' + x'w$$

$$f_5 = x' + y'w$$

$$f_8 = y'w' + yw + xw$$

$$f_8 = y'w' + yw + xy'$$

$$f_3 = y + w'$$

$$f_6 = x' + y + w'$$

$$f_9 = y'w' + x'yz'w + xyzw$$

Tag fram minimala PS-uttryck ur karnaughdiagrammen nedan! (Nollorna!)

		ZW			
f_{10}		00	01	11	10
xy	00	1	0	0	1
	01	0	1	1	0
	11	0	1	1	0
	10	1	0	0	1

$f_{10} =$

		ZW			
f_{11}		00	01	11	10
xy	00	1	1	1	1
	01	0	1	1	0
	11	0	0	0	0
	10	0	0	0	0

$f_{11} =$

		ZW			
f_{12}		00	01	11	10
xy	00	1	0	0	1
	01	1	1	1	1
	11	1	1	1	1
	10	1	0	0	1

$f_{12} =$

		ZW			
f_{13}		00	01	11	10
xy	00	0	1	1	0
	01	0	1	1	1
	11	0	1	1	1
	10	0	0	0	0

$f_{13} =$

		ZW			
f_{14}		00	01	11	10
xy	00	1	1	1	1
	01	1	1	1	1
	11	0	0	0	0
	10	0	1	1	0

$f_{14} =$

		ZW			
f_{15}		00	01	11	10
xy	00	1	1	1	1
	01	1	1	1	1
	11	1	1	1	1
	10	1	0	0	1

$f_{15} =$

		ZW			
f_{16}		00	01	11	10
xy	00	1	0	0	1
	01	1	1	1	1
	11	0	1	1	0
	10	1	0	0	1

$f_{16} =$

		ZW			
f_{17}		00	01	11	10
xy	00	1	0	0	1
	01	0	1	1	0
	11	0	1	1	0
	10	1	1	1	1

$f_{17} =$

		ZW			
f_{18}		00	01	11	10
xy	00	1	0	0	1
	01	0	1	0	0
	11	0	0	1	0
	10	1	0	0	1

$f_{18} =$

Svar: (Rättat 2012-08-30)

$$f_{10} = (y' + w)(y + w')$$

$$f_{13} = (y + w)(z + w)(x' + y)$$

$$f_{16} = (y + w')(x' + y' + w)$$

$$f_{18} = (y' + w)(y + w')(x' + y' + z)(x + y' + z')$$
 eller

$$f_{18} = (y' + w)(y + w')(x' + y' + z)(x + z' + w')$$
 eller

$$f_{18} = (y' + w)(y + w')(x' + z + w')(x + y' + z')$$
 eller

$$f_{18} = (y' + w)(y + w')(x' + z + w')(x + z' + w')$$

$$f_{11} = x'(y' + w)$$

$$f_{14} = (x' + y')(x' + w)$$

$$f_{17} = (y' + w)(x + y + w')$$

$$f_{12} = y + w'$$

$$f_{15} = x' + y + w'$$