

① a $X = (A' + B') \cdot (C' \cdot D) ;$

A	B	C	D	A'	B'	C'	A' + B'	C' · D	(A' + B') · (C' · D)
0	0	0	0	1	1	1	1	0	0
0	0	0	1	1	1	1	1	1	1
0	0	1	0	1	1	0	1	0	0
0	0	1	1	1	1	0	1	0	0
0	1	0	0	1	0	1	1	0	0
0	1	0	1	1	0	1	1	1	1
0	1	1	0	1	0	0	1	0	0
0	1	1	1	1	0	0	1	0	0
1	0	0	0	0	1	1	1	0	0
1	0	0	1	0	1	1	1	1	1
1	0	1	0	0	1	0	1	0	0
1	0	1	1	0	1	0	1	0	0
1	1	0	0	0	0	1	0	0	0
1	1	0	1	0	0	1	0	1	0
1	1	1	0	0	0	0	0	0	0
1	1	1	1	0	0	0	0	0	0

⑥ $X = (A \oplus B) \cdot C ;$

A	B	C	A ⊕ B	(A ⊕ B) · C
0	0	0	0	0
0	0	1	0	0
0	1	0	1	0
0	1	1	1	1
1	0	0	1	0
1	0	1	1	1
1	1	0	0	0
1	1	1	0	0

c) $X = (A \oplus B) + C;$

A	B	C	$A \oplus B$	$(A \oplus B) + C$
0	0	0	0	0
0	0	1	0	1
0	1	0	1	1
0	1	1	1	1
1	0	0	1	1
1	0	1	1	1
1	1	0	0	0
1	1	1	0	1

2) expressão equivalente a (a)

A	B	C	D	A'	B'	C'	$A' + B'$	$C'D$	$(A' + B')(C'D)$
0	0	0	1	1	1	1	1	1	1
0	1	0	1	1	0	1	1	1	1
1	0	0	1	0	1	1	1	1	1

$$S = \bar{A}\bar{B}\bar{C}D + \bar{A}B\bar{C}D + A\bar{B}\bar{C}D$$

expressão equivalente (b)

A	B	C	$A \oplus B$	$(A \oplus B) \cdot C$
0	0	0	0	0
0	0	1	0	0
0	1	0	1	0
0	1	1	1	1
1	0	0	1	0
1	0	1	1	1
1	1	0	0	0
1	1	1	0	0

$$S = \bar{A}B\bar{C} + A\bar{B}\bar{C}$$

expressão equivalente (C)

A	B	C	$A \oplus B$	$(A \oplus B) + C$
0	0	0	0	0
0	0	1	0	1
0	1	0	1	1
0	1	1	1	1
1	0	0	1	1
1	0	1	1	1
1	1	0	0	0
1	1	1	0	1

$$S = \bar{A}\bar{B}C + \bar{A}B\bar{C} + \bar{A}BC + A\bar{B}\bar{C} + A\bar{B}C + ABC$$

③ a) $X = (A' + B') + AB; = A$

A	B	A'	B'	$A' + B'$	AB	$(A' + B') + AB$
0	0	1	1	1	0	1
0	1	1	0	1	0	1
1	0	0	1	1	0	1
1	1	0	0	0	1	1

} = A

⑥ b) $X = (A'B) + AB';$

A	B	A'	B'	$A'B$	AB'	$A'B + AB'$
0	0	1	1	0	0	0
0	1	1	0	1	0	1
1	0	0	1	0	1	1
1	1	1	0	1	0	1

$S_1 = B$

$S_2 = A$

$S = A + B$

③ $X = (AB)'$

A	B	AB	(AB)'
0	0	0	1
0	1	0	1
1	0	0	1
1	1	1	0

	B	
A	0	1
0	X	X
1	X	

$S_1 = \bar{B}$

$S_2 = \bar{A}$

$S = \bar{A} + \bar{B}$

④ a $S = (\bar{A}C + A\bar{D}) + \bar{B}C\bar{D}$

b $S = ((\bar{A}\bar{B})(\bar{A}\bar{C})(\bar{B}\bar{C}))'$ $F_1 = ((A+B)\bar{B} + A\bar{D})$ $F_2 = ((A+B\bar{D})(C+A)\bar{C})$
 $F_3 = AB + BC + CA + CD + \bar{A} + \bar{B}$

c $F_1 = ((A + \bar{B})\bar{B} + A\bar{D})$

$F_2 = ((A + B\bar{D})(C + A)\bar{C})$

$F_3 = AB + BC + CA + CD + \bar{A} + \bar{B}$