

1.

	$\bar{B}$	$B$
$\bar{A}$	1	1
$A$	0	0

$$Y = \bar{A}$$

2.

	$\bar{C}\bar{D}$	$\bar{C}D$	$CD$	$C\bar{D}$
$\bar{A}\bar{B}$	1	1	1	1
$\bar{A}B$	1	1	0	0
$AB$	0	0	0	1
$A\bar{B}$	0	0	1	1

(a)

	$\bar{C}\bar{D}$	$\bar{C}D$	$CD$	$C\bar{D}$
$\bar{A}\bar{B}$	1	0	1	1
$\bar{A}B$	1	0	0	1
$AB$	0	0	0	0
$A\bar{B}$	1	0	1	1

(b)

	$\bar{C}$	$C$
$\bar{A}\bar{B}$	1	1
$\bar{A}B$	0	0
$AB$	1	0
$A\bar{B}$	1	X

(c)

- a)  $\bar{A}\bar{C} + \bar{B}C + AC\bar{D}$   
 b)  $\bar{B}\bar{D} + \bar{A}\bar{D} + \bar{B}C$   
 c)  $\bar{B} + A\bar{C}$

3.

	$\bar{B}\bar{C}$	$\bar{B}C$	$BC$	$B\bar{C}$
$\bar{A}$	1	0	1	0
$A$	1	1	1	0

$$x = \bar{B}\bar{C} + BC + A\bar{B}$$

	$\bar{C}\bar{D}$	$\bar{C}D$	$CD$	$C\bar{D}$
$\bar{A}\bar{B}$	1	0	1	1
$\bar{A}B$	1	0	0	1
$AB$	1	0	0	1
$A\bar{B}$	1	1	0	1

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

	$\bar{C}\bar{D}$	$\bar{C}D$	$CD$	$C\bar{D}$
$\bar{A}\bar{B}$	1	0	0	0
$\bar{A}B$	0	1	1	0
$AB$	1	0	1	1
$A\bar{B}$	1	0	0	0

$$x = A\bar{C}\bar{D} + \bar{B}\bar{C}\bar{D} + \bar{A}BD + ABC$$

4.

A	B	C	D	S
0	0	0	0	0
0	0	0	1	1
0	0	1	0	1
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	0
0	1	1	1	1
1	0	0	0	1
1	0	0	1	0
1	0	1	0	1
1	0	1	1	1
1	1	0	0	0
1	1	0	1	1
1	1	1	0	1
1	1	1	1	0

	$\bar{C}\bar{D}$	$\bar{C}D$	$CD$	$C\bar{D}$
$\bar{A}\bar{B}$	0	1	0	1
$\bar{A}B$	1	1	1	0
$AB$	0	1	0	1
$A\bar{B}$	1	0	1	1

$$\begin{aligned}
 S &= \bar{A}\bar{B}\bar{C} + \bar{A}\bar{C}\bar{D} + \bar{A}BD + B\bar{C}D + AC\bar{D} + A\bar{B}C + \bar{B}C\bar{D} + A\bar{B}\bar{D} = \\
 &= \bar{A}\bar{B}(\bar{C} + D) + \bar{C}\bar{D}(\bar{A} + B) + A\bar{B}(C + \bar{D}) + C\bar{D}(A + \bar{B}) = \\
 &= \bar{A}\bar{B}\bar{C}\bar{D} + \bar{C}\bar{D}\bar{A}\bar{B} + A\bar{B}\bar{C}\bar{D} + C\bar{D}\bar{A}\bar{B} = \\
 &\quad \bar{A}\bar{B} \oplus C\bar{D} + \bar{C}\bar{D} \oplus A\bar{B}
 \end{aligned}$$

