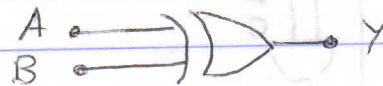


## Folha de exercícios # 5

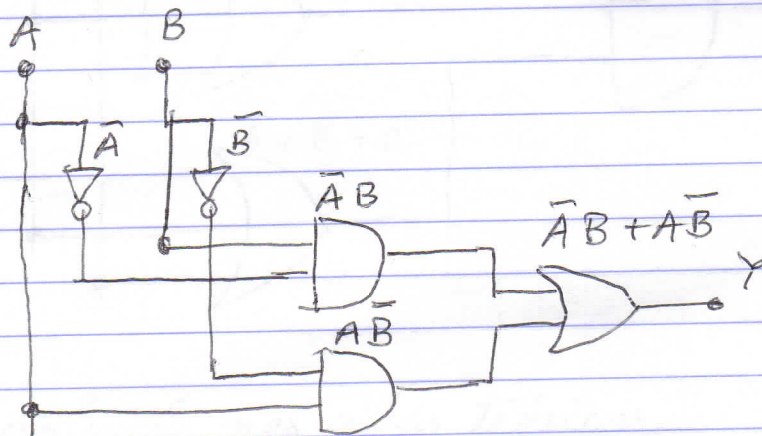
1.  $Y = A \oplus B$



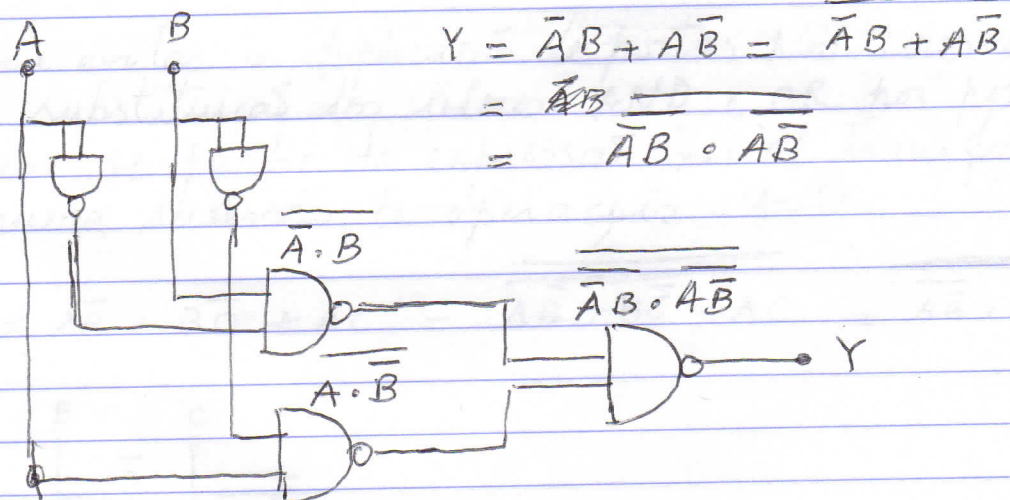
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

$$Y = \bar{A} \cdot B + A \cdot \bar{B}$$

a) Circuito com portas AND, OR e NOT



b) Circuito com portas NAND



$$2. f = \bar{W}X\bar{Y}Z + \bar{W}\bar{X}\bar{Y}Z + W\bar{X}\bar{Y}Z + WX\bar{Y}Z$$

a) simplificação com álgebra booleana

$$f = \bar{W}\bar{Y}Z(X + \bar{X}) + W\bar{Y}Z(X + \bar{X})$$

$$= \bar{W}\bar{Y}Z + W\bar{Y}Z = \bar{Y}Z(\bar{W} + W) = \bar{Y}Z$$

b) simplificação com mapa de Karnaugh

	$\bar{Y}\bar{Z}$	$\bar{Y}Z$	$YZ$	$Y\bar{Z}$
$\bar{W}\bar{X}$	1			
$\bar{W}X$	1			
$WX$	1			
$W\bar{X}$	1			

$\bar{Y}Z$  (eliminadas as variáveis  $W$  e  $X$ )

3.

a)

	$\bar{W}\bar{X}$	$\bar{W}X$	$WX$	$W\bar{X}$
$\bar{Y}\bar{Z}$	1	1	1	1
$\bar{Y}Z$	1	1	1	1
$YZ$				
$Y\bar{Z}$				

variáveis eliminadas:  
 $W, \bar{W}, X, \bar{X}, Z, \bar{Z}$

expressão simplificada:  $\bar{Y}$

b)

	$\bar{W}\bar{X}$	$\bar{W}X$	$WX$	$W\bar{X}$
$\bar{Y}\bar{Z}$	1			
$\bar{Y}Z$	1	1		1
$YZ$			1	
$Y\bar{Z}$		1		1

Expressão simplificada:

$$\bar{W}\bar{X}\bar{Y} + \bar{W}\bar{Y}Z + \bar{X}\bar{Y}Z + WXYZ + \bar{W}X Y\bar{Z} + W\bar{X} Y\bar{Z}$$

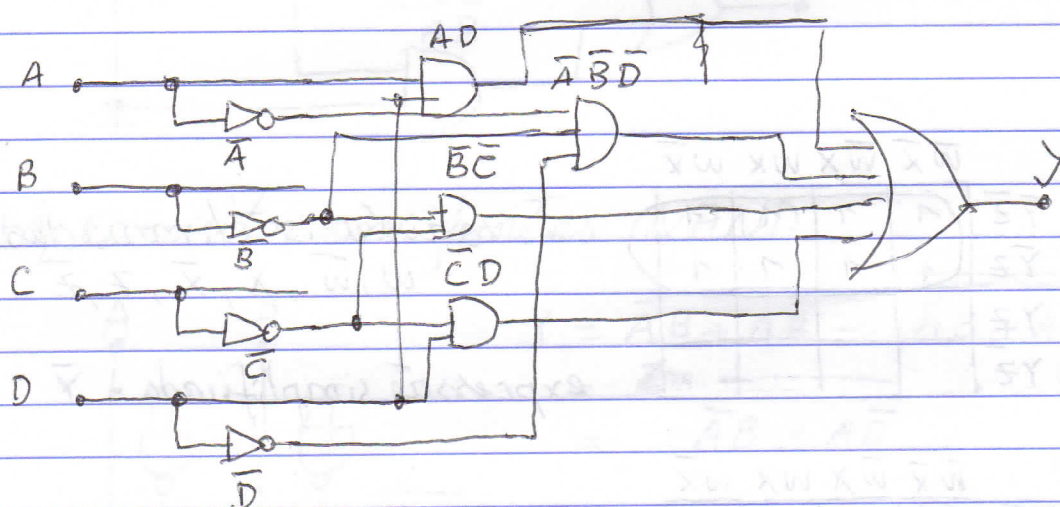


4.

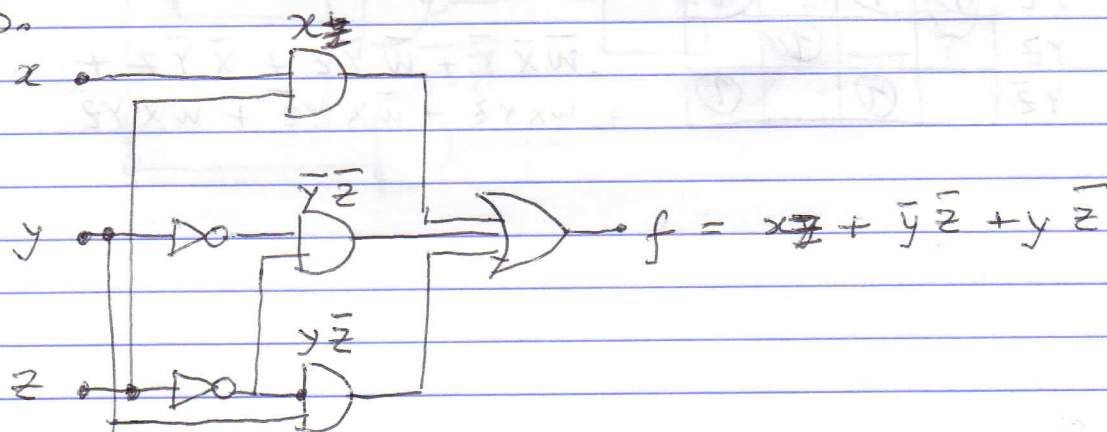
A	B	C	D	Y	A	B	C	D	Y
0	0	0	0	1	1	0	0	0	1
0	0	0	1	1	1	0	0	1	1
0	0	1	0	1	1	0	1	0	0
0	0	1	1	0	1	0	1	1	1
0	1	0	0	0	1	1	0	0	0
0	1	0	1	1	1	1	0	1	1
0	1	1	0	0	1	1	1	0	0
0	1	1	1	0	1	1	1	1	1

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

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



5.

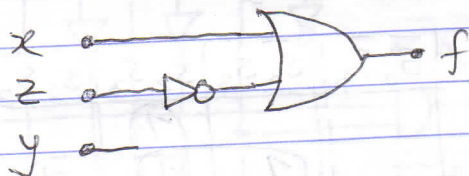


Mapa de karnaugh:

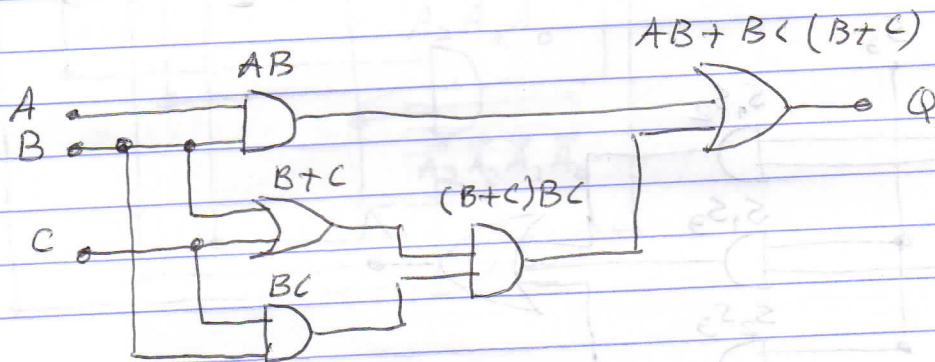
	$\bar{Y}\bar{Z}$	$\bar{Y}Z$	$YZ$	$Y\bar{Z}$
$\bar{X}$	1	0	0	1
$X$	1	1	1	1

$$f = x + \bar{z}$$

Circuito lógico simplificado:



5.



$$Q = AB + BC^2 + B^2C = AB + BC$$

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

$$Q = AB + BC$$