

The truth tables for the basic operations are:

And		
A	B	AB
0	0	0
0	1	0
1	0	0
1	1	1

Or		
A	B	A+B
0	0	0
0	1	1
1	0	1
1	1	1

Not	
A	A
0	1
1	0

أوجد جدول الصواب للعلاقات التالية:

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

$A+BC$				
A	B	C	BC	$A+BC$
0	0	0	0	0
0	0	1	0	0
0	1	0	0	0
0	1	1	1	1
1	0	0	0	1
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

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

$PT(P+Z)$						
P	T	Z	T	PT	$P+Z$	$PT(P+Z)$
0	0	0	1	0	0	0
0	0	1	1	0	1	0
0	1	0	0	0	0	0
0	1	1	0	0	1	0
1	0	0	1	1	1	1
1	0	1	1	1	1	1
1	1	0	0	0	1	0
1	1	1	0	0	1	0

$$F = \overline{X} + \overline{X}\overline{Y}Z + \overline{X}\overline{Y}\overline{Z} + \overline{Y}Z + \overline{Y}$$

باستخدام قواعد الجبر البوليني بسط الدالة التالية:

$$F = \overline{X} + \overline{X}\overline{Y}Z + \overline{X}\overline{Y}\overline{Z} + \overline{Y}Z + \overline{Y}$$

$$F = \overline{X}(1 + \overline{Y}Z) + \overline{Y}\overline{Z}(\overline{X} + 1) + \overline{Y} \quad X+1=1$$

$$F = \overline{X} \cdot 1 + \overline{Y}\overline{Z} \cdot 1 + \overline{Y} \quad X \cdot 1=1$$

$$F = \overline{X} + \overline{Y}\overline{Z} + \overline{Y}$$

$$F = \overline{X} + \overline{Y}(\overline{Z} + 1)$$

$$F = \overline{X} + \overline{Y}$$

$$F = \overline{\overline{(\overline{Y} + \overline{Z})} \cdot \overline{(\overline{X} + \overline{Y} + \overline{Z})}}$$

باستخدام قواعد الجبر البوليني بسط الدالة التالية:

$$F = \overline{\overline{(\overline{Y} + \overline{Z})} \cdot \overline{(\overline{X} + \overline{Y} + \overline{Z})}}$$

$$F = \overline{\overline{(\overline{Y} + \overline{Z})} + \overline{(\overline{X} + \overline{Y} + \overline{Z})}} \quad \overline{\overline{X}} = X$$

$$F = \overline{(\overline{Y} + \overline{Z}) + (\overline{X} + \overline{Y} + \overline{Z})}$$

$$F = \overline{\overline{Y} + \overline{Z} + \overline{X} + \overline{Y} + \overline{Z}}$$

$$F = \overline{X + \overline{Y} + \overline{Y} + \overline{Z} + \overline{Z}} \quad \overline{Y} + \overline{Y} = \overline{Y}$$

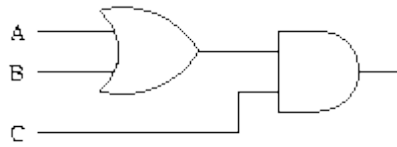
$$\overline{Z} + \overline{Z} = 1$$

$$F = \overline{X + \overline{Y} + 1}$$

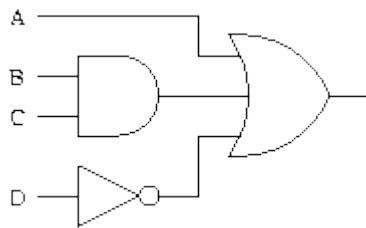
$$F = \overline{X + 1} \quad X+1=1$$

أرسم الدوال التالية:

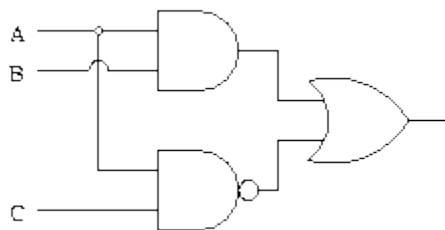
- Draw a logic circuit for $(A + B)C$.



- Draw a logic circuit for $A + BC + D$.



- Draw a logic circuit for $AB + AC$.



- Draw a logic circuit for $(A + B)(C + D)C$.

