

sinyal : 1, 0

Boole Değişkeni: P, Q, R, S $\{1, 0\}$ → Boole İfadesi: \wedge, \vee, \sim

devre

input-output tablo

→

NOT

Input	Output
P	R
1	0
0	1

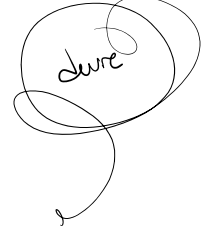
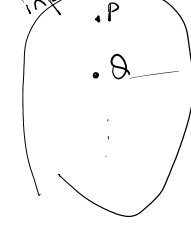
→

AND

Input	Output	
P	Q	R
1	1	1
1	0	0
0	1	0
0	0	0

OR

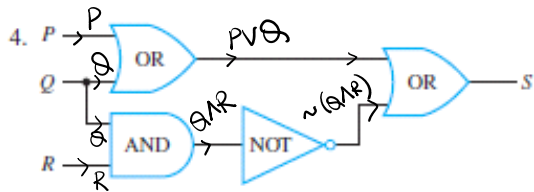
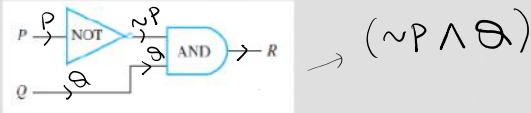
Input	Output	
P	Q	R
1	1	1
1	0	1
0	1	1
0	0	0

 $\{1, 0\}$ solda
input değişkenlerioutput
RDevrelerde

- * Devrenin resmî şekli
- * Devrenin input-output tablosu
- * Devrenin Boole ifadesi

1) Devresi Verilen Boole İfadesini Bulma

→ ! Soldan sağa birleştirilerek yazılır.

→ input signals: $P = 0, Q = 0, R = 0$ → output: 1

$$(P \vee Q) \vee \sim(Q \wedge R)$$

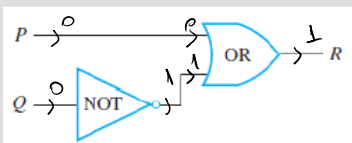
$$\begin{array}{cc} 0 & 0 \\ \hline 0 \end{array} \quad \begin{array}{cc} 0 & 0 \\ \hline 0 \\ 1 \end{array}$$

Devreye karşılık gelen

Boole ifadesi

$$0 \vee 1 \Rightarrow 1$$

2) Verilen Devrenin Input/Output Tablosunu Yapma



Input		Output
P	Q	R
1	1	1 ✓
1	0	1 ✓
0	1	0 ✓
0	0	1 ✓

Sabir

Sabir

Input/Output Tablosu Verilen Boole İfadesini Bulma

- 3) 1. Output'un 1 olduğu satırlara bakılır.
2. Bu satırlar için sonucu 1 yapacak ifade ve bağlacı kullanılarak inputlardan oluşturulur.
3. İfadeler veya bağlacı ile bağlanır.

$$(P \wedge Q \wedge R) \vee (P \wedge \sim Q \wedge R) \vee (P \wedge \sim Q \wedge \sim R)$$

Input			Output
P	Q	R	S
1	1	1	1
1	1	0	0
1	0	1	1
1	0	0	1
0	1	1	0
0	1	0	0
0	0	1	0
0	0	0	0

1. satır $\rightarrow (P \wedge Q \wedge R)$
 3. satır $\rightarrow (P \wedge \sim Q \wedge R)$
 4. satır $\rightarrow (P \wedge \sim Q \wedge \sim R)$

19.

P	Q	R	S
1	1	1	0
1	1	0	1
1	0	1	0
1	0	0	1
0	1	1	0
0	1	0	1
0	0	1	0
0	0	0	0

$P \wedge Q \wedge \sim R$
 $P \wedge \sim Q \wedge \sim R$
 $\sim P \wedge Q \wedge \sim R$

a) input-output tablosu verilen devrenin Boole ifadesini yazınız.

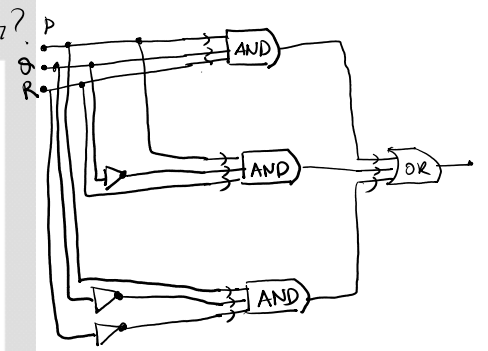
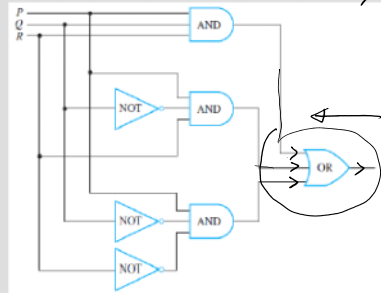
$$(P \wedge Q \wedge \sim R) \vee (P \wedge \sim Q \wedge \sim R) \vee (\sim P \wedge Q \wedge \sim R)$$

b) devreyi çiziniz.

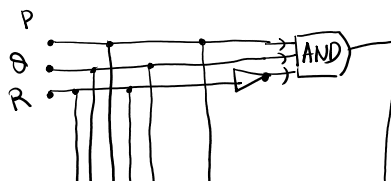
4) Boole İfadesi Verilen Devreyi Bulma

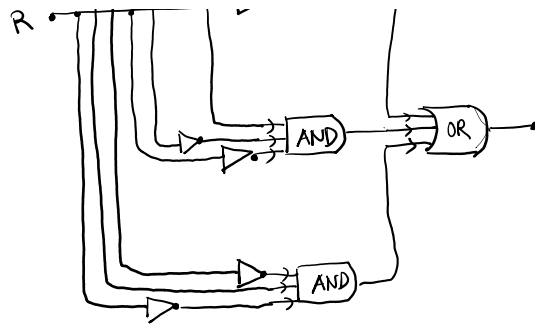
! En genelden içe doğru sağdan sola çizilir.

$$(P \wedge Q \wedge R) \vee (P \wedge \sim Q \wedge R) \vee (P \wedge \sim Q \wedge \sim R)$$



19-b) $(P \wedge Q \wedge \sim R) \vee (P \wedge \sim Q \wedge \sim R) \vee (\sim P \wedge Q \wedge \sim R)$





Construct circuits for the Boolean expressions in 13–17.

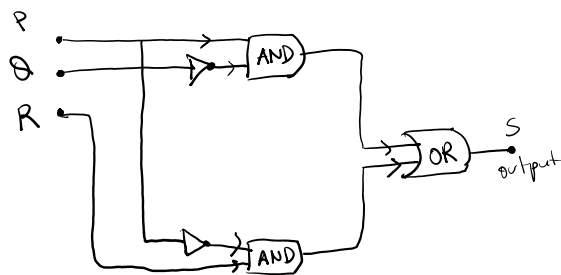
13. $\sim P \vee Q$

14. $\sim(P \vee Q)$

15. $P \vee (\sim P \wedge \sim Q)$

16. $(P \wedge Q) \vee \sim R$

→ 17. $(P \wedge \sim Q) \vee (\sim P \wedge R)$



input			output
P	Q	R	S
1	1	1	0
1	1	0	0
1	0	1	1
1	0	0	0
0	1	1	0
0	1	0	0
0	0	1	0
0	0	0	0