

ÖRNEK

$[p \vee (p \wedge 0)]' \wedge [(p \vee 0') \wedge (p' \vee p')]$ nin en sade hali nedir?

ÇÖZÜM

$$\equiv [p \vee 0]' \wedge [\underbrace{(p \vee 1)}_1 \wedge p']$$

$$\equiv p' \wedge (\underbrace{1 \wedge p'}_{p'})$$

$$\equiv p' \wedge p'$$

$$\equiv p' //$$

ÖRNEK

$(p' \vee q) \wedge (q' \wedge r) \equiv 1$ ise

$[(r \wedge p') \vee (q \wedge r')] \wedge (p \vee q') \equiv ?$ (doğruluk değeri nedir?)

ÇÖZÜM

$$(p' \vee q) \wedge (q' \wedge r) \equiv 1$$

$$p' \vee q \equiv 1, q' \wedge r \equiv 1$$

$$p' \vee 0 \equiv 1 \quad q \equiv 1, r \equiv 1$$

$$p' \equiv 1 \quad q \equiv 0, r' \equiv 0$$

$$p \equiv 0$$

$$[(r \wedge p') \vee (q \wedge r')] \wedge (p \vee q')$$

$$\equiv [\underbrace{(1 \wedge 1)}_1 \vee \underbrace{(0 \wedge 0)}_0] \wedge \underbrace{(0 \vee 1)}_1$$

$$\equiv (1 \vee 0) \wedge 1$$

$$\equiv 1 \wedge 1$$

$$\equiv 1 //$$

✓ $(p \wedge q)' \equiv p' \vee q'$

p	q	p'	q'	$p \wedge q$	$(p \wedge q)'$	$p' \vee q'$
1	1	0	0	1	0	0
1	0	0	1	0	1	1
0	1	1	0	0	1	1
0	0	1	1	0	1	1

ÖRNEK

$(p' \vee q)' \vee (q \wedge p)$ önermesinin en sade hali nedir?

ÇÖZÜM

$$[(p')' \wedge q'] \vee (q \wedge p)$$

$$\equiv (p \wedge q') \vee (q \wedge p)$$

$$\equiv (p \wedge q') \vee (p \wedge q)$$

$$\equiv p \wedge (q' \vee q)$$

$$\equiv p \wedge 1$$

$$\equiv p //$$

ÖRNEK

$[p \wedge (q \vee p')]' \wedge (q \vee \underbrace{0}_q)$ önermesinin en sade hali nedir?

ÇÖZÜM

$$[p \wedge (q' \wedge p)] \wedge q$$

$$\equiv p \wedge q' \wedge p \wedge q$$

$$\equiv \underbrace{p \wedge p}_p \wedge \underbrace{q' \wedge q}_0$$

$$\equiv p \wedge 0$$

$$\equiv 0 //$$

ÖRNEK

$[(p' \wedge q')' \wedge (p \vee q')] \vee (p' \wedge 1)$ önermesinin en sade hali nedir?

ÇÖZÜM

$$\begin{aligned} & [(p \vee q) \wedge (p \vee q')] \vee p' \\ & \equiv [p \vee \underbrace{(q \wedge q')}_0] \vee p' \\ & \equiv \underbrace{(p \vee 0)}_p \vee p' \\ & \equiv p \vee p' \\ & \equiv 1 // \end{aligned}$$

ÖRNEK

$[p' \wedge (q \vee p)] \wedge (p \vee q')$ önermesinin çelişki olduğunu gösteriniz.

ÇÖZÜM

$$\begin{aligned} & [p' \wedge (p \vee q)] \wedge (p \vee q') \\ & \equiv [\underbrace{(p' \wedge p)}_0 \vee (p' \wedge q)] \wedge (p \vee q') \\ & \equiv [0 \vee (p' \wedge q)] \wedge (p \vee q') \\ & \equiv (p' \wedge q) \wedge (p \vee q') \\ & \equiv (p' \wedge q) \wedge (p' \wedge q)' \\ & \equiv 0 // \end{aligned}$$