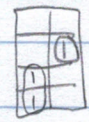


Oct. 14

Rule for combining K-Map groups:

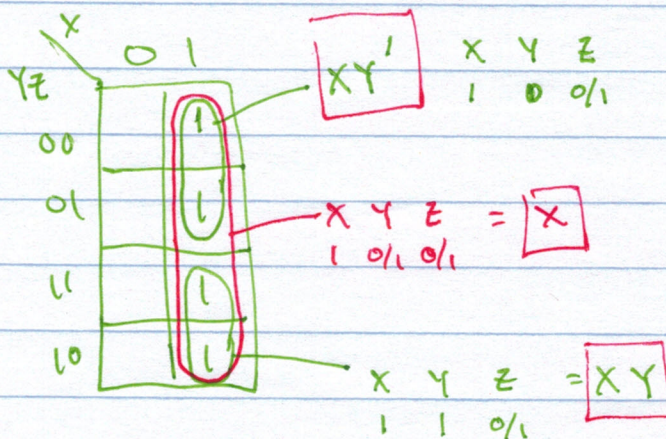
- 1) Groups must contain $1, 2, 4, 8, \dots, 2^n$ "adjacent" minterms
- 2) Except for the smallest/largest group cases, a group can be split/joined using $XY + XY' = X$ [Thm 9]

K-Map Size (# of input vars.)	Group Size / # of intervals in each term
2	1/2, 2/1
3	1/3, 2/2, 4/1
4	1/4, 2/3, 4/2, 8/1
5	1/5, 2/4, 4/3, 8/2, 16/1

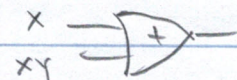
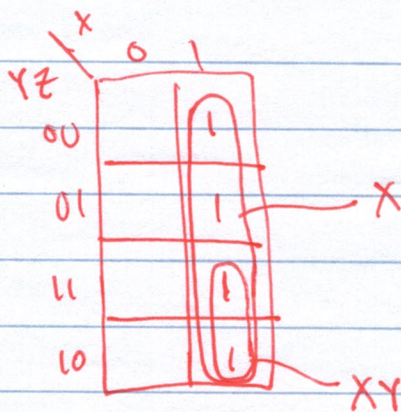


Thm 9:

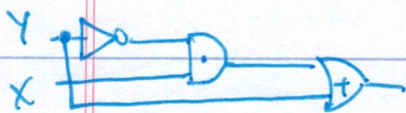
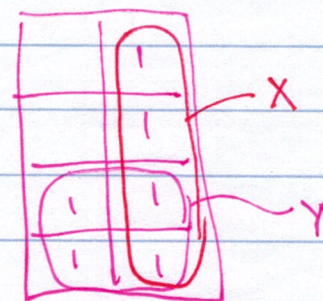
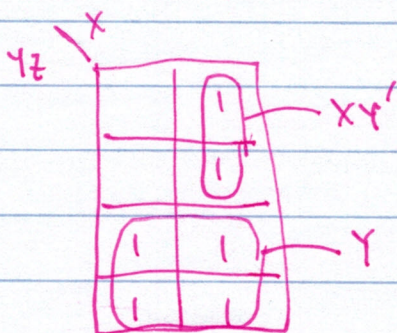
$$XY + XY' = X$$



Thm 10: $X + XY = X$

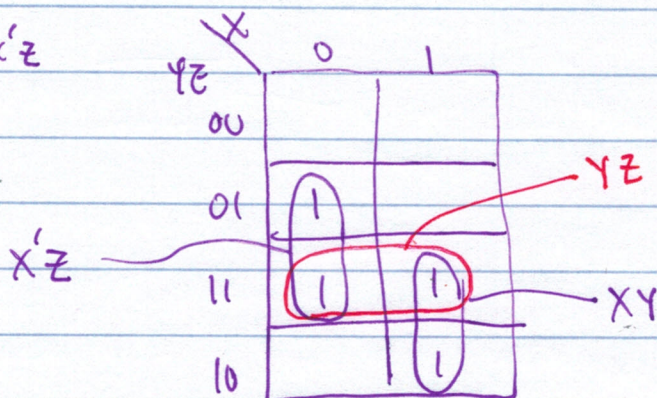
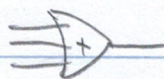


Thm 11 D: $XY' + Y = X + Y$

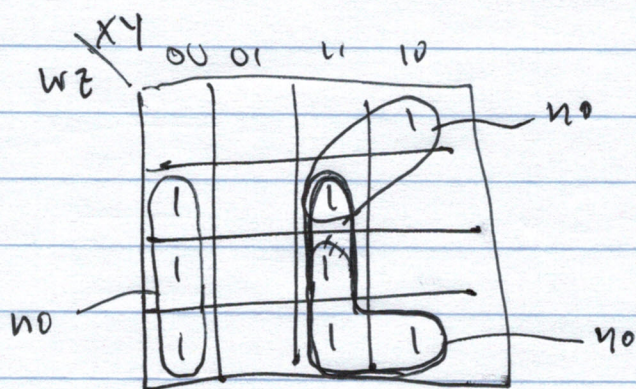


Thm 15: Consensus

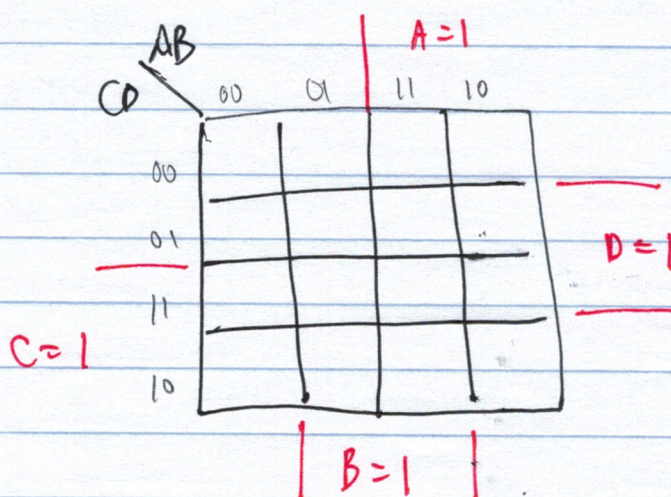
$ZX + YZ + X'Z = ZX + X'Z$



Invalid groups



Alternate labeling



Implicants

Def: Implicant: is a single 1 or combinable group of 1s in a K-map

(P.I.)

Def. Prime Implicant: is any Implicant that cannot be combined with another implicant (to eliminate a literal)

Def. Essential Prime Implicant: (E.P.I.) is a P.I. which covers a minterm that is covered by no other P.I.

E.P.I. is essential for the minimum solution.