

## ENGR-433 homework #2 part a - due Monday

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Note: In problems 1 & 2 below I will use an apostrophe to denote a complemented term. Thus the complement of X which is X bar would be denoted as X'.

- 1) Reduce this expression to its simplest form using boolean laws. State the law used at each step:  $F = AB + A'CD + BC + A'C$  (Refer to the handout I gave you if needed)
  
- 2) Place the following function into a conventional 1's & 0's K-map. Place the variables on the K-map axes in alphabetical order beginning with the vertical axis (like the K-map shown in problem 4 below):  $W(a,b,c) = ab'c + a'b'c' + abc' + a'bc + ab'c'$
  
- 3) Use conventional K-maps to find a minimal sum-of-products expression for the following logic functions:  $F(a,b,c) = \text{minterms}(1,3,5,6,7)$  and  $G(a,b,c,d) = \text{minterms}(1,2,3,4,5,6,7,9,10,11,13)$ . Recall that a minterm is a term that has all the variables in it. As in problem #2, place the variables in alphabetical order on the map axis.
  
- 4) Loop out the entered variable K-map below and write the reduced function.

		BC			
		00	01	11	10
A	0	1	D	0	0
	1	$\emptyset$	$\bar{D}$	1	1