

Answer on Question #44388 – Math - Abstract Algebra

Problem.

Simplify the following Boolean function:

$F = A'C + A'B + AB'C + BC$, using K-map?

Solution.

Firstly we construct three variable map for the following Boolean function.

		BC			
		00	01	11	10
A	0	0	1	1	1
	1	0	1	1	0

Now we divide map by group of 1's. Each group is denoted by other color.

		BC			
		00	01	11	10
A	0	0	1	1	1
	1	0	1	1	0

Diagram illustrating the K-map with groups of 1's highlighted in different colors:

- A green group covers the cells (A=0, BC=01), (A=0, BC=11), (A=1, BC=01), and (A=1, BC=11). An arrow labeled **C** points to this group.
- A red group covers the cells (A=0, BC=11) and (A=0, BC=10). An arrow labeled **A'B** points to this group.

Hence $F = A'B + C$.

Answer: $F = A'B + C$.