

For the following expressions, produce a truth table and identify the minterms that describe the function.

- Show column detail in your truth table at a level similar to Table 2-1 in the textbook (Slide 6 in the Lecture 6 handout).
- Present your result in the $F_n(A, B, C, D) = \sum m(x, y, \dots)$ format.

a) $F_1(A, B, C, D) = D(B' + AC) + C(A' + B)$

AB \ CD	00	01	10	11
00				
01	1			1
10	1	1	1	1
11	1	1	1	

$$F_n(A, B, C, D) = \sum m(1, 2, 3, 6, 7, 9, 11, 14, 15)$$

A	B	C	D	$D(B' + AC)$	$C(A' + B)$	m
0	0	0	0	0	0	
0	0	0	1	1	0	1 m_1
0	0	1	0	0	1	1 m_2
0	0	1	1	1	1	1 m_3
0	1	0	0	0	0	
0	1	0	1	0	0	
0	1	1	0	0	1	1 m_6
0	1	1	1	1	1	1 m_7
1	0	0	0	0	0	1 m_8
1	0	0	1	0	0	
1	0	1	0	1	0	1 m_{11}
1	0	1	1	1	0	
1	1	0	0	0	1	1 m_{14}
1	1	0	1	0	1	1 m_{15}
1	1	1	0	1	1	
1	1	1	1	1	1	

b) $F_2(A, B, C, D) = (D + B'D + AB')(ABC + B'D')$

AB \ CD	00	01	10	11
00				1
01				
10			1	
11			1	1

$$F_n(A, B, C, D) = \sum m(8, 10, 14, 15)$$

A	B	C	D	$(D + B'D + AB')$	$(ABC + B'D')$	m
0	0	0	0	0	0	
0	0	0	1	1	0	
0	0	1	0	0	0	
0	0	1	1	1	0	
0	1	0	0	0	0	
0	1	0	1	0	0	
0	1	1	0	0	0	
0	1	1	1	1	0	1 m_8
1	0	0	0	0	0	
1	0	0	1	0	0	
1	0	1	0	1	0	
1	0	1	1	1	0	1 m_{10}
1	1	0	0	0	1	
1	1	0	1	0	1	
1	1	1	0	0	1	1 m_{14}
1	1	1	1	0	1	1 m_{15}