

Homework 4 Solutions

8.

- a. i. & ii. $f = a'b'c + b'd + ac'$
- b. i. $g = (a' + b + c)(b' + d)(a + c')$
- ii. $g = a'b'c' + a'c'd + abd + bc'd + ab'c + acd$
- c. i. $h = a'c(b + d) + a(c' + bd)$
ii. $= a'b'c + a'cd + ac' + abd$

9. a.

x	y	z	f	g
0	0	0	0	1
0	0	1	1	0
0	1	0	0	1
0	1	1	1	0
1	0	0	0	1
1	0	1	0	0
1	1	0	1	1
1	1	1	0	0

b. $f = x'y'z + x'yz + xyz'$
 $g = x'y'z' + x'yz' + xy'z' + xyz'$

c. $f = x'z + xyz'$ P9a
 $g = z'(x'y' + x'y + xy' + xy) = z'$ P8a, P9aa

d. $f'(x, y, z) = \sum m(0, 2, 4, 5, 7)$
 $g'(x, y, z) = \sum m(1, 3, 5, 7)$

11. a.

A	B	C	AB'	BC	AC	F	A+B	A+C'	00	AB'	G
0	0	0	0	0	0	0	0	1	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	1	1	1	0	1
0	1	1	0	1	0	1	1	0	0	0	0
1	0	0	1	0	0	1	1	1	1	1	1
1	0	1	1	0	1	1	1	1	1	1	1
1	1	0	0	0	0	0	1	1	1	0	1
1	1	1	0	1	1	1	1	1	1	0	1

b. $F = A'B'C + A'B'C' + AB'C + ABC$
 $G = A'B'C' + AB'C' + AB'C + ABC' + ABC$

c. $F = (A'B'C + ABC) + (AB'C' + AB'C)$
 $= BC + AB'$

P9a, P9a

$$G = A'B'C' + A(B'C' + B'C + BC' + BC)$$
 $= A'B'C' + A$

P9aa

d. $F'(A, B, C) = \sum m(0, 1, 2, 6)$
 $G'(A, B, C) = \sum m(0, 1, 3)$

12.

X	Y	Z	G	a.	b.	c.
0	0	0	0	0	1	0
0	0	1	X	0	0	0
0	1	0	X	0	1	0
0	1	1	0	0	0	0
1	0	0	X	0	1	1
1	0	1	1	1	1	1
1	1	0	1	1	1	1
1	1	1	0	0	0	0

yes no yes