

# Homework 3 Solutions

3. a. (corrected)

a	b	c	a c'	a' c	b c	f	(a+ c)	(a'+b+c')	g
0	0	0	0	0	0	0	0	1	0
0	0	1	0	1	0	1	1	1	1
0	1	0	0	0	0	0	0	1	0
0	1	1	0	1	1	1	1	1	1
1	0	0	1	0	0	1	1	1	1
1	0	1	0	0	0	0	1	0	0
1	1	0	1	0	0	1	1	1	1
1	1	1	0	0	1	1	1	1	1

They are equal

b.

a	b	c	a'c'	bc	ab'	f	b'c'	a'c'	ac	g	b'c'	ac	a'b	h
0	0	0	1	0	0	1	1	1	0	1	1	0	0	1
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	1	0	0	1	0	1	0	1	0	0	1	1
0	1	1	0	1	0	1	0	0	0	0	0	0	1	1
1	0	0	0	0	1	1	1	0	0	1	1	0	0	1
1	0	1	0	0	1	1	0	0	1	1	0	1	0	1
1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	0	1	0	1	0	0	1	1	0	1	0	1

f = h, but ≠ g because of row 011

c.

a	b	c	d	a b	a c	a' b d	f	b d	a b' c	a b d'	g
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0
0	1	0	1	0	0	1	1	1	0	0	1
0	1	1	0	0	0	0	0	0	0	0	0
0	1	1	1	0	0	1	1	1	0	0	1
1	0	0	0	0	0	0	0	0	0	0	0
1	0	0	1	0	0	0	0	0	0	0	0
1	0	1	0	0	1	0	1	0	1	0	1
1	0	1	1	0	1	0	1	0	1	0	1
1	1	0	0	1	0	0	1	0	0	1	1
1	1	0	1	1	0	0	1	1	0	0	1
1	1	1	0	1	1	0	1	0	0	1	1
1	1	1	1	1	1	0	1	1	0	0	1

f = g

## Homework 3 Solutions

6.

$$\begin{aligned} \text{b. } x'y'z' + x'yz + xyz &= x'y'z' + yz(x' + x) && \text{P8a} \\ &= x'y'z' + yz && \text{P5a, P3b} \end{aligned}$$

$$\begin{aligned} \text{d. } a'b'c' + a'b'c + abc + ab'c & \\ &= a'b' + ac && \text{P9a, P9a} \end{aligned}$$

$$\begin{aligned} \text{h. } a'b'c' + a'bc' + a'bc + ab'c + abc' + abc & \\ = (a'b'c' + \underline{a'bc'}) + (\underline{a'bc'} + a'bc + abc' + \underline{abc}) + & \\ \quad (\underline{abc} + ab'c) & \\ \quad \text{Duplicated second and sixth terms,} && \text{P6a} \\ = a'c' + b(a'c' + a'c + ac' + ac) + ac && \text{P9a, P9a} \\ = a'c' + b + ac && \text{P9aa} \end{aligned}$$