

CL tutorial 6

Ex 1

a)

		cd			
		00	01	11	10
ab	00	0	0	1	1
	01	0	0	1	1
	11	1	0	0	1
	10	1	0	0	1

$$(\neg a \wedge c) \vee (a \wedge \neg d)$$

b)

		cd			
		00	01	11	10
ab	00	0	0	1	1
	01	0	0	1	1
	11	1	0	0	1
	10	1	0	0	1

$$\neg ((\neg a \wedge \neg c) \vee (a \wedge d))$$

(De Morgan's Laws)

$$= (a \vee c) \wedge (\neg a \vee \neg d)$$

Ex 2

$$r \leftrightarrow \neg(a \vee b)$$

		ab			
		00	01	11	10
r	0	1	0	0	0
	1	0	1	1	1

$$(r \wedge b) \vee (r \wedge a) \vee (\neg r \wedge \neg a \wedge \neg b)$$

Ex 3a)

$$a \vee \neg b, \neg a \vee \neg d$$

$$(a \vee \neg b) \wedge (\neg a \vee \neg d)$$

		c, d			
a, b	00	01	11	10	
	1	1	1	1	
01	0	0	0	0	when $(a \vee \neg b)$ is 0
11	1	0	0	1	
10	1	0	0	1	when $(\neg a \vee \neg d)$ is 0

b)

4 predicates

$$(a, b, c, d)$$

but c is irrelevant

$$2^3 = 8 \text{ regions}$$

$$2^8 = 256 \text{ different universes/classes segments}$$

256 - 1 to account for the given ~~segment~~ segment

255 different δ .