

ECGR 2181 - Sept 14, 2009 (1)

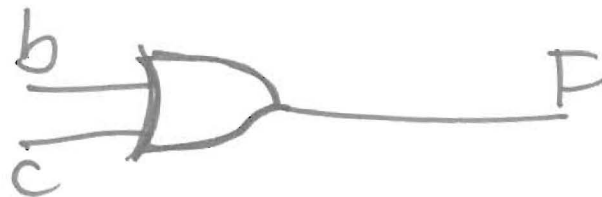
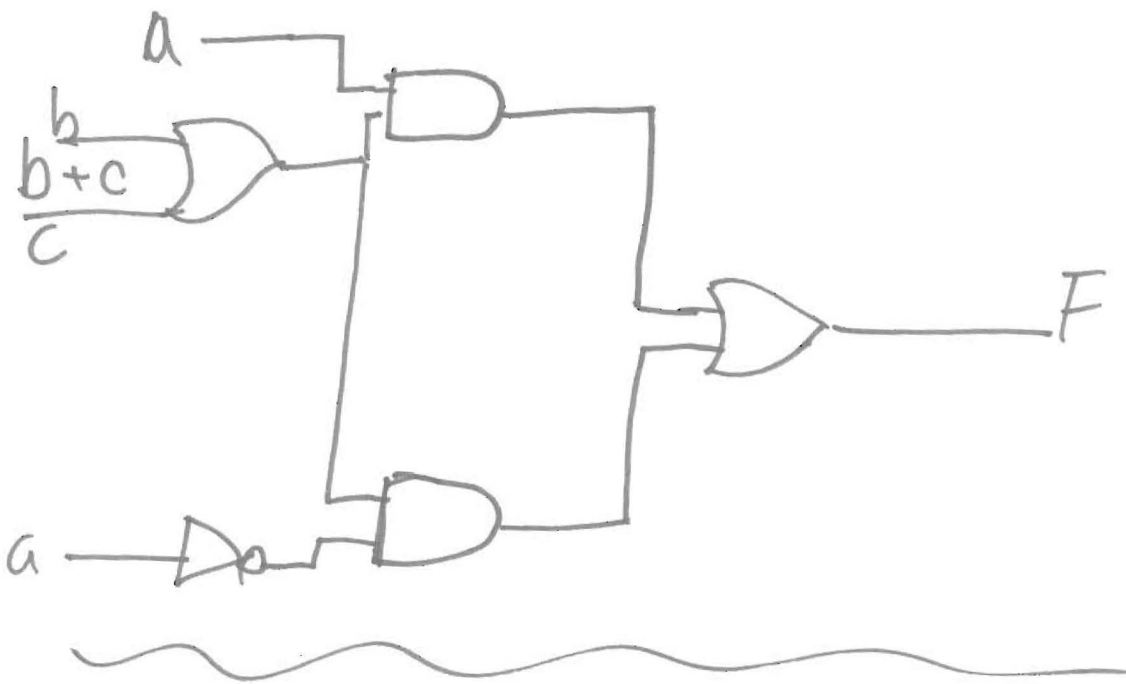
Same Gate

$$a(b+c) + a'(b+c) = F$$

2B-OR  
1-NOT  
2-AND

$$(a+a')(b+c) = F \quad (\text{because of distrib})$$
$$b+c = F \quad (\text{because of compl})$$

1-OR gate



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(2)

F	c	h	p	$c'hp + c'hp' + c'h'p$
0	0	0	0	0
1	0	0	1	1
1	0	1	0	1
1	0	1	1	1
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0

Truth table  
of the  
P2-23  
problem

QED!

$$F = ab'c + abc' + abc$$

$$= ab'c + abc' + abc \quad (\text{Idem-potent})$$

$$= (b+b')(ac) + (ab)(c'+c) \quad (\text{Distr})$$

$$= 1(ac) + ab(1) \quad (\text{Comp})$$

$$= \boxed{ac + ab}$$

$$= a(c+b)$$

abc	ac	ab	ac+ab
000	0	0	0
001	0	0	0
010	0	0	0
011	0	0	0
100	0	0	0
101	1	0	1
110	1	1	1
111	1	1	1

3 gate

2 gates