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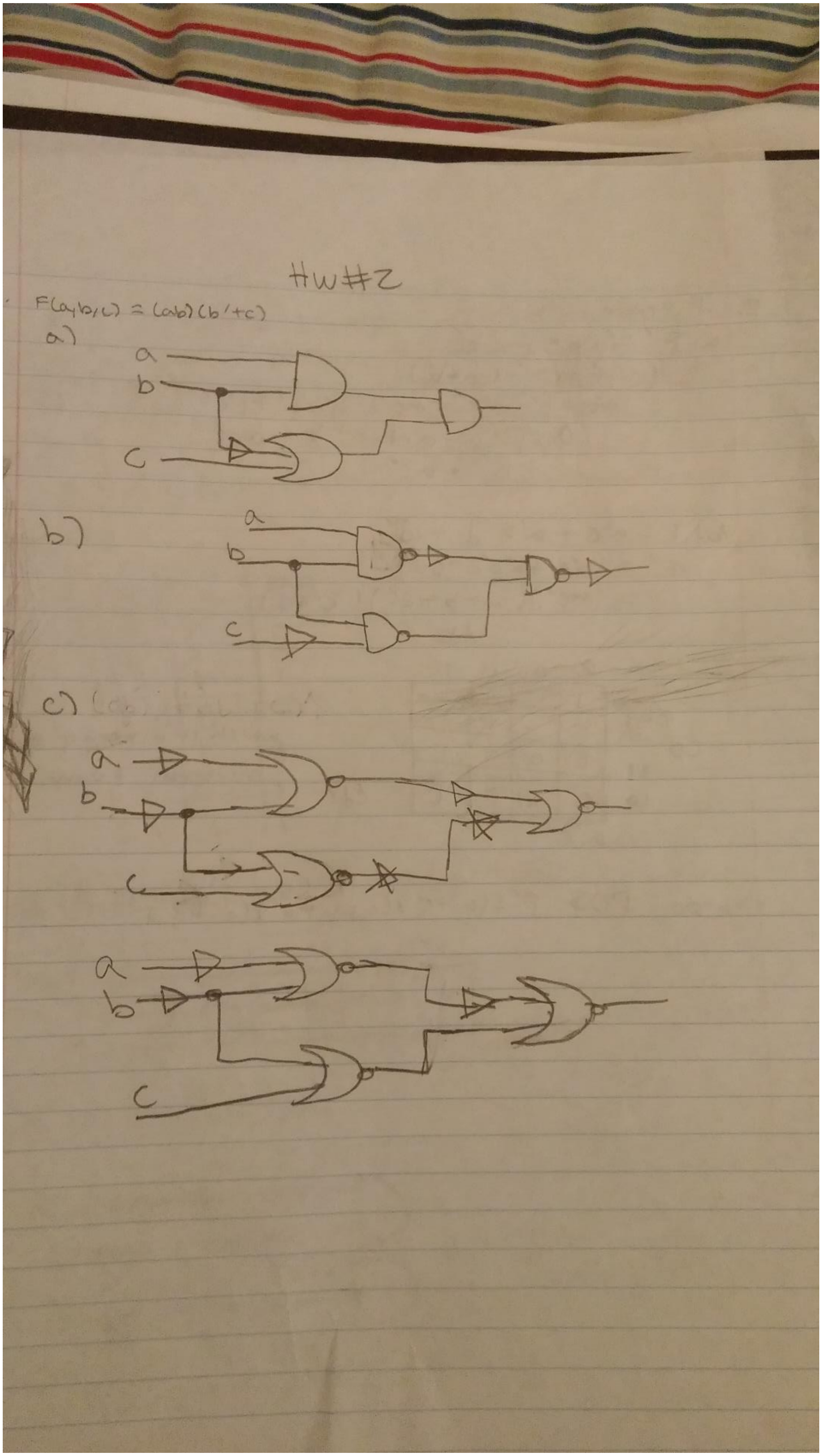

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$F = abc + a'b$

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

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

$\cancel{a'a} + b'a + c'a + a'b' + b'b' + b'c'$

$0 + b'(a + a' + 1 + c') + ac'$

$b' + ac'$

b) $F = a'c + a'b'd + cd'$

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

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

AB

CD \ AB	00	01	11	10
00	1	1	1	1
01 ($a'b'd$)	0	1	1	1
11	0	0	1	1
10	0	0	0	0

cd'

$a'c$

which is already the minimal form

so POS $F' = (a + c')(a + b + d')(c' + d)$

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3. $F = (A' \cdot B' \cdot C')' \cdot C + (A' \cdot B' \cdot C')' + D$ $= A + B + C + D$

$= (A+B+C)' C + (A+B+C) + D$ De Morgan's

$= (A+B+C) \cdot \cancel{C} \; \cancel{+} \; A + B + C + D$ ~~Associative~~ A[illegible]ve

$= C + A + B + C + D$ covering

$= A + B + C + C + D$ communitivity

$= A + B + C + D$ ✓ idempotency

4. a)

a m0	b m1	c m2	out
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

b) $a'bc + ab'c + abc' + abc = out$

c)

a \ bc	00	01	11	10
0	0	0	1	0
1	0	1	1	1

$out = a'c + a'b + bc$

d)