HOMEWORK

1) $xy + x'z + yz$

$xy + x'z + 1 \cdot yz$

$xy + x'z + (x' + x) \cdot yz$

$xy + x'z + x'yz + xyz$

$x'z(\underbrace{1+y}_{1}) + xy(\underbrace{z+1}_{1})$

$\boxed{x'z + xy}$

---

2) $(x+y) \cdot (x'+z) \cdot (y+z) = (x+y) \cdot (x'+z)$

Converting it it's dual.

$xy + x'z + yz = xy + x'z$

$xy + x'z + yz \cdot 1 = xy + x'z$

$(x+x')$

$xy + x'z + yzx + yzx'$

$xy(z+1) + x'z(1+y)$

$1 \qquad 1$

$\boxed{xy + x'z = xy + x'z}$

---

3) $F(A,B,C,D) = B'D + A'D + BD$

$B'D \cdot (A+A') + A'D \cdot (B+B') + BD \cdot (A+A')$

$B'DA + B'DA' + A'DB + A'DB' + BDA + BDA'$

$AB'D \cdot (C+C') + A'B'D \cdot (C+C') + A'BD \cdot (C+C') + A'B'D \cdot (C+C') + ABD \cdot (C+C')$

$A'BD \cdot (C+C')$

$AB'DC + AB'DC' + A'B'CD + A'B'C'D + A'BCD + A'BC'D + A'B'CD + A'B'C'D + ABCD + ABC'D +$

$A'BCD + A'BC'D$

A=8 B=4 C=2 D=1

Sum of minterms: $\Sigma\{11, 9, 3, 1, 7, 5, 15, 13\}$

? $\Sigma = \{1, 3, 5, 7, 9, 11, 13, 15\}$

Product of maxterms: $\Pi(0, 2, 4, 6, 8, 10, 12, 14)$

A	B	C	D	F
1	1	1	1	ABCD
1	1	1	0	ABCD'
1	1	0	1	ABC'D
1	1	0	0	ABC'D'
1	0	1	1	AB'CD
1	0	1	0	AB'CD'
1	0	0	1	AB'C'D
1	0	0	0	AB'C'D'
0	1	1	1	A'BCD
0	1	1	0	A'BCD'
0	1	0	1	A'BC'D
0	1	0	0	A'BC'D'
0	0	1	1	A'B'CD
0	0	1	0	A'B'CD'
0	0	0	1	A'B'C'D
0	0	0	0	A'B'C'D'

24 → 16

6) $F = B'D + A'D + BD$

$D(\underbrace{B' + B}_{1}) + A'D$

$D + A'D$

$D(1 + A')$

$\boxed{F = D}$