

1)

A	B	C	Y
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

	AB			
	00	01	11	10
C	0	0	1	0
1	1	1	1	1

$$Y = AB + CB + AC$$

$$Y = \bar{A}BC + A\bar{B}C + AB\bar{C} + ABC$$

$$Y = B(\bar{A} + A) + A\bar{B}C + AB\bar{C}$$

$$Y = B + A\bar{B}C + AB\bar{C}$$

$$Y = C(A\bar{B} + B) + AB\bar{C}$$

$$Y = C(A + B) + AB\bar{C}$$

$$Y = AC + BC + AB\bar{C}$$

$$Y = BC + A(C + B\bar{C})$$

$$Y = BC + A(C + B)$$

$$Y = BC + AC + AB$$

Distributive law

Complement law

Distributive law

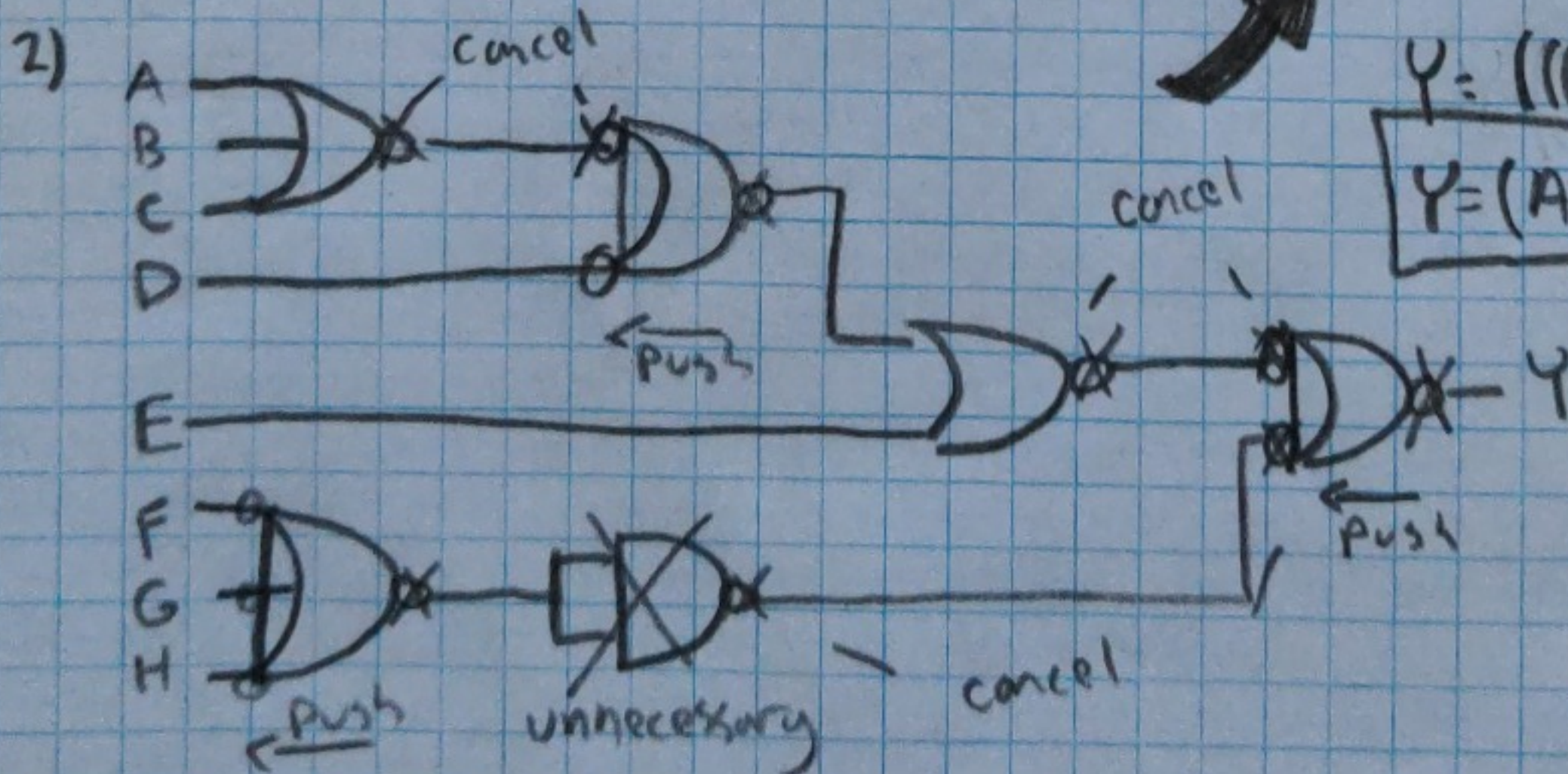
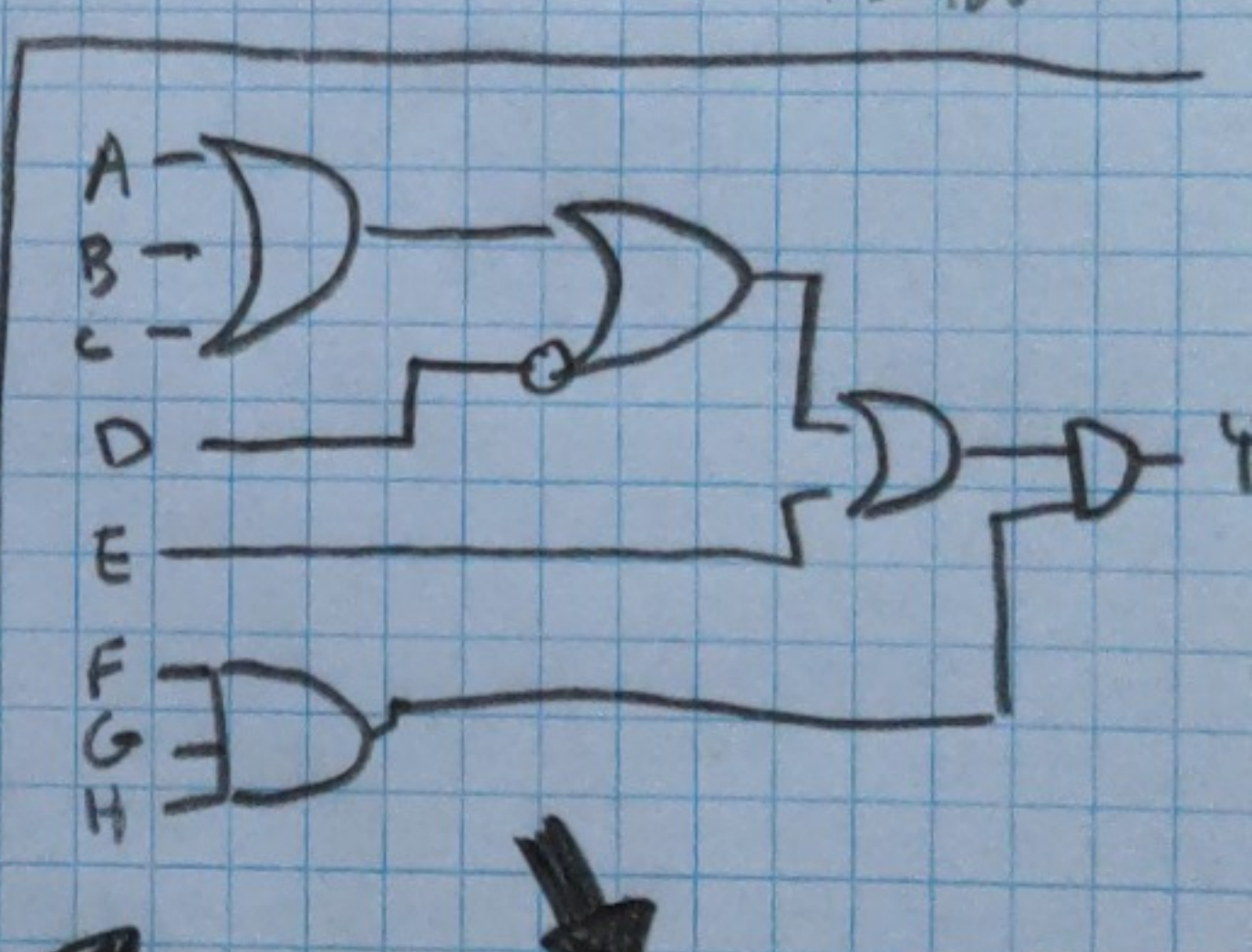
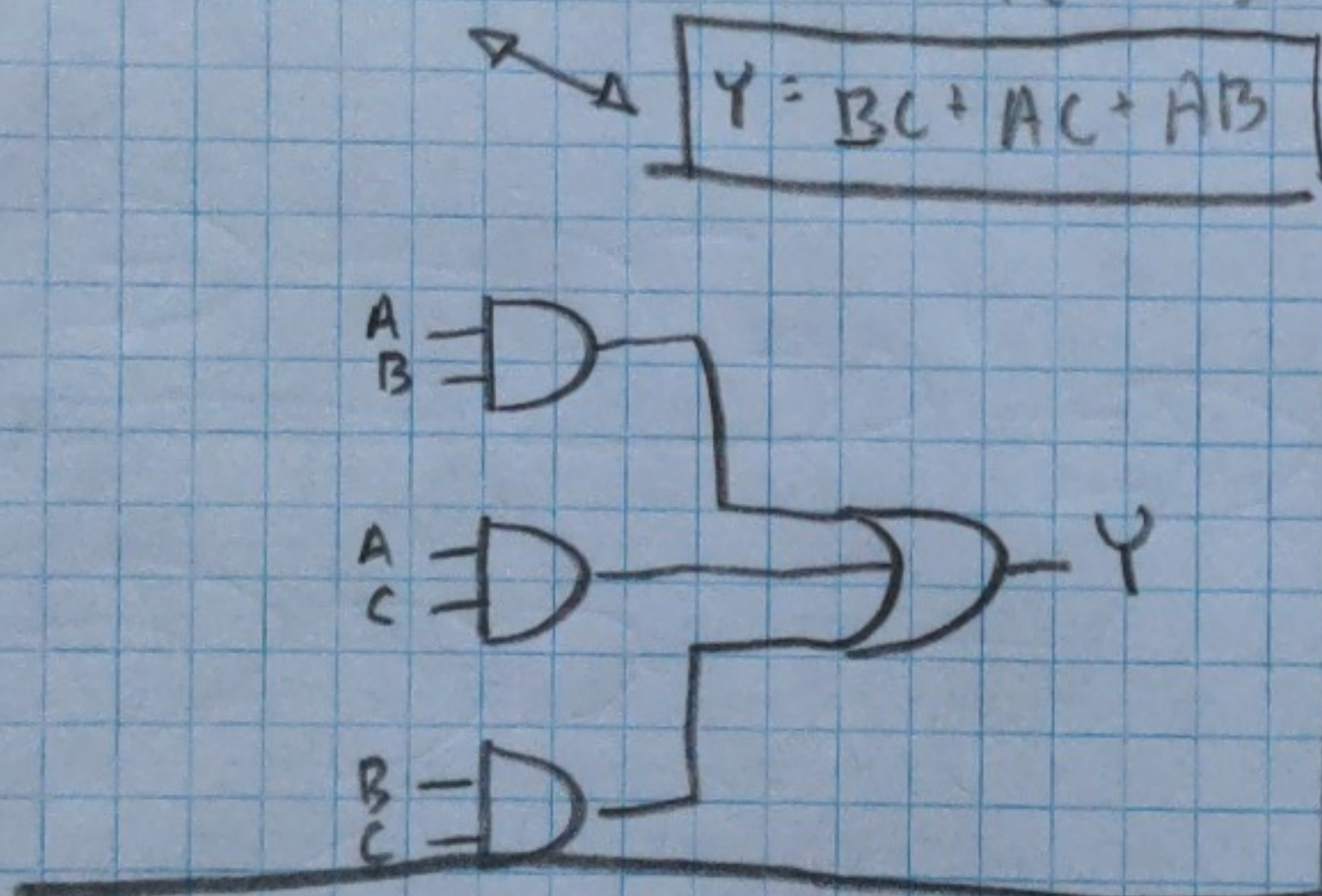
Absorption law

Distributive law

Distributive law

absorption law

distributive law



$$Y = (((A+B+C)+D)+E)(FGH)$$

$$Y = (A+B+C+D+E)(FGH)$$

3) a) $Y = \bar{A} + A\bar{B}C + (A + \bar{B}C)$

A	B	C	Y
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	0


		AB			
		00	01	11	10
C	0	1	1	0	0
	1	1	1	0	1

$$Y = \bar{A} + C\bar{B}$$

b) $Y = A + \bar{A}B + \bar{A}\bar{B}C + (A + \bar{B} + C)$

		AB			
		00	01	11	10
C	0	1	1	0	0
	1	0	0	0	0

$$Y = \bar{A}\bar{C}$$



A	B	C	Y
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	0

4) a) $Y = (A + B + C)D + AD + B$

A	B	C	D	Y
0	0	0	0	0
0	0	0	1	1
0	0	1	0	0
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	1
0	1	1	1	1
1	0	0	0	0
1	0	0	1	1
1	0	1	0	0
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

Y AB

	00	01	11	10
00	0	1	1	0
01	1	1	1	1
11	0	1	1	1
10	0	1	1	0

CD

$Y = B + \bar{C}D + DA$

Chris Hunt

HW 3

ENGR 271

4) b) $Y = ABCD + \bar{A}B\bar{C}D + (\bar{B} + D)$

A	B	C	D	Y
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	1
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	0
1	1	0	0	1
1	1	0	1	0
1	1	1	0	1
1	1	1	1	1

		AB			
		00	01	11	10
CD	00	0	1	1	0
	01	0	1	0	0
	11	0	0	1	0
	10	0	1	1	0

$$Y = \bar{D}B + \bar{A}\bar{B}\bar{C} + ABC$$