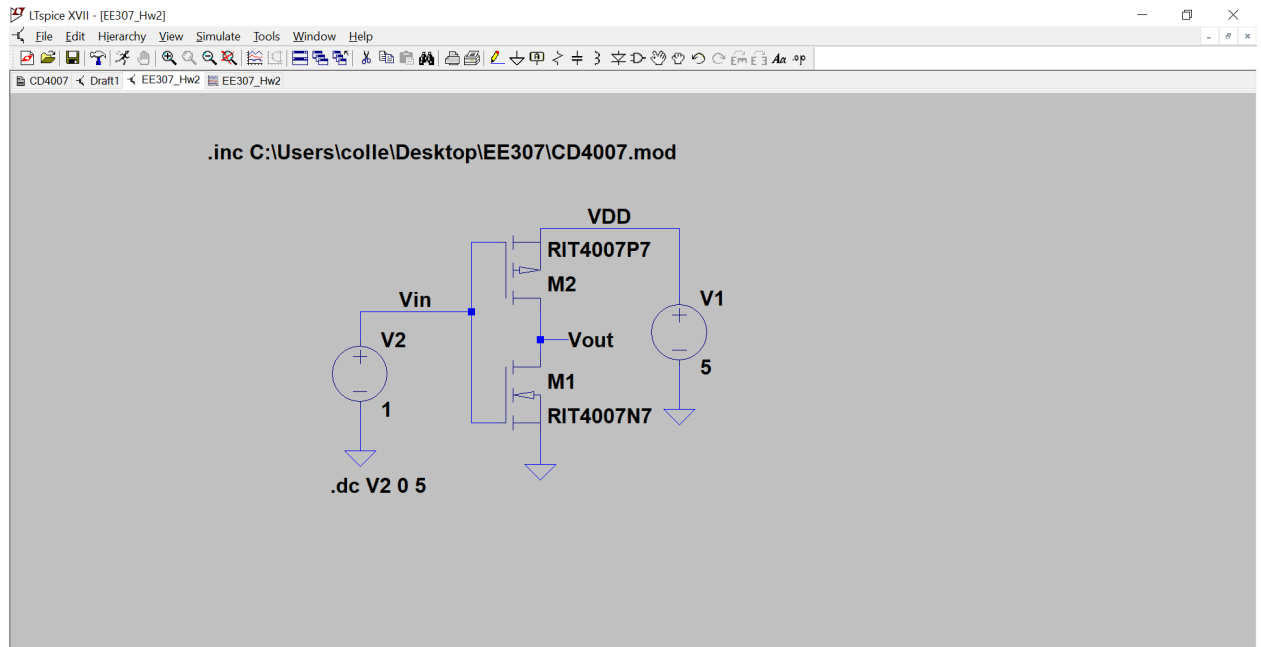
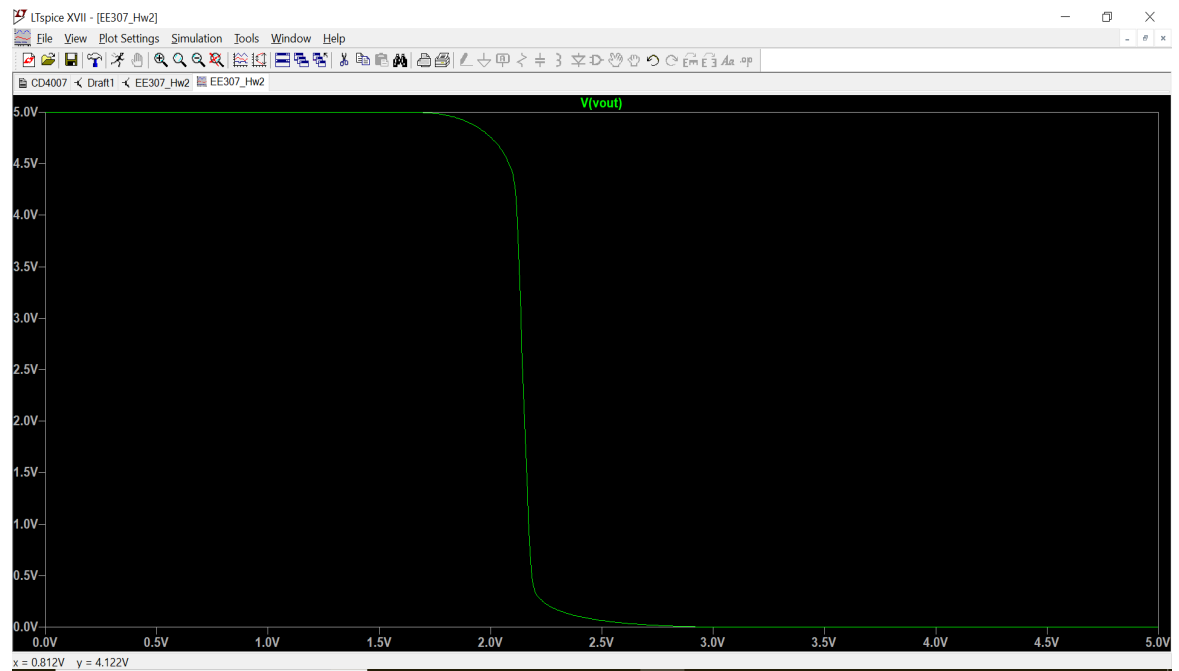


1. HW2

- I did it
- Digikey sells 7,072,345 parts
- 6999 FET arrays
- I read it and understand



2.



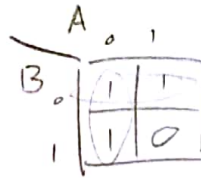
a.

3. See paper

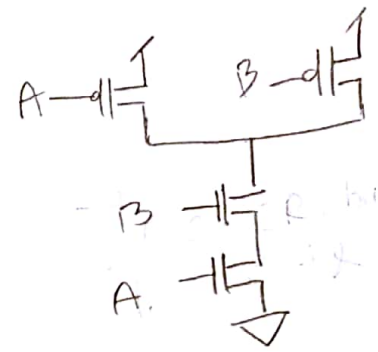
4. a)

NAND

A	B	V <sub>out</sub>
0	0	1
0	1	1
1	0	1
1	1	0



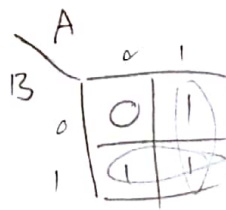
$$\frac{\overline{A+B}}{\overline{A+B}} = \overline{A \cdot B}$$



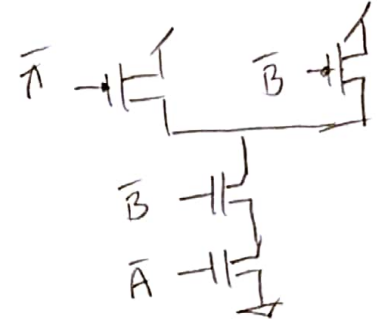
b)

OR

A	B	V <sub>out</sub>
0	0	0
0	1	1
1	0	1
1	1	1



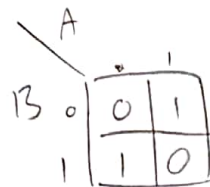
$$\frac{A+B}{A+B} = \overline{\overline{A+B}} = \overline{\overline{A} \cdot \overline{B}}$$



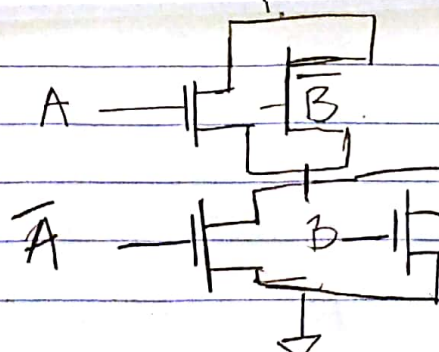
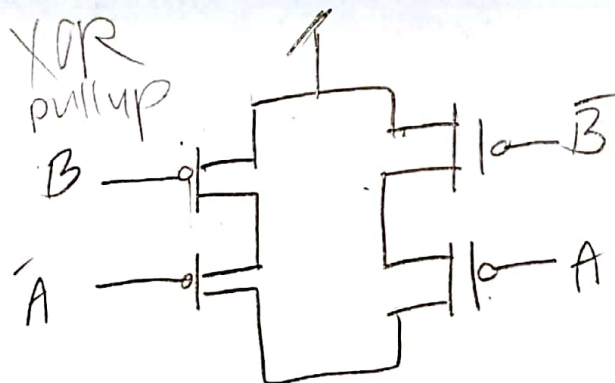
d)

XOR

A	B	V <sub>out</sub>
0	0	0
0	1	1
1	0	1
1	1	0

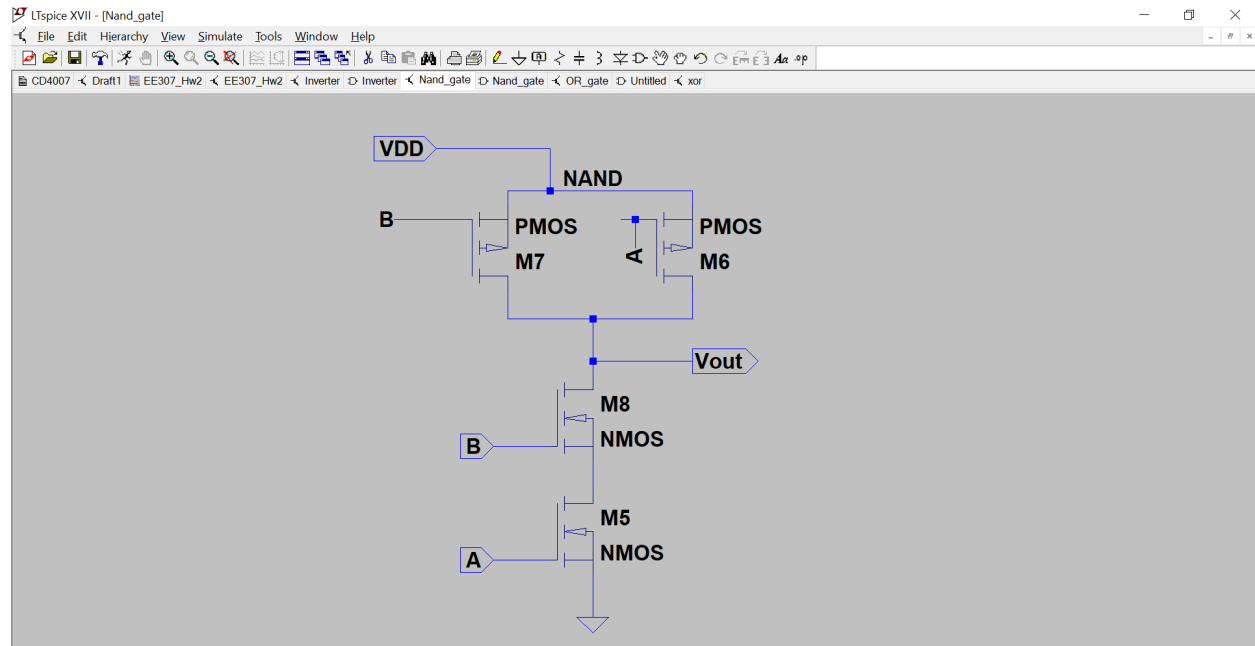


$$\frac{(A \cdot \overline{B}) + (\overline{A} \cdot B)}{(A \cdot \overline{B}) + (\overline{A} \cdot B)} = \overline{(A \cdot \overline{B}) \cdot (\overline{A} \cdot B)} = \overline{(\overline{A+B}) \cdot (A+B)}$$

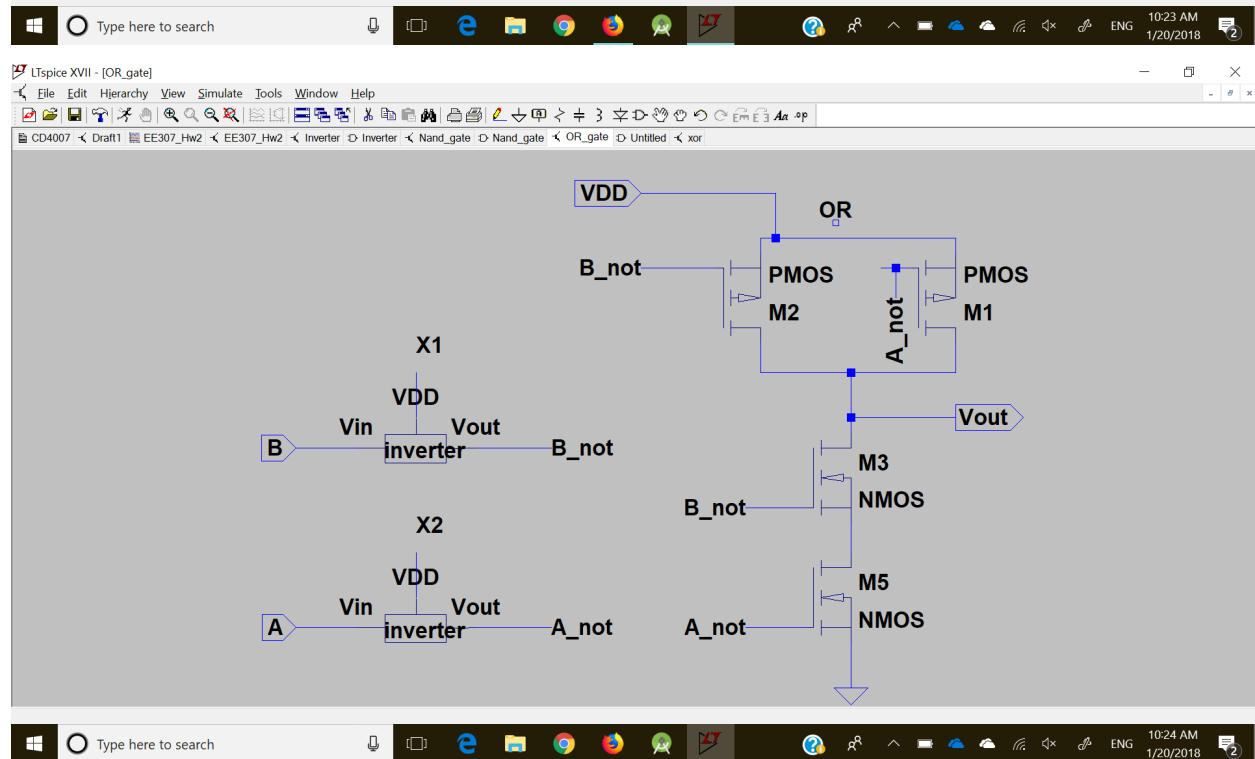


XOR pull down

4. See page 3

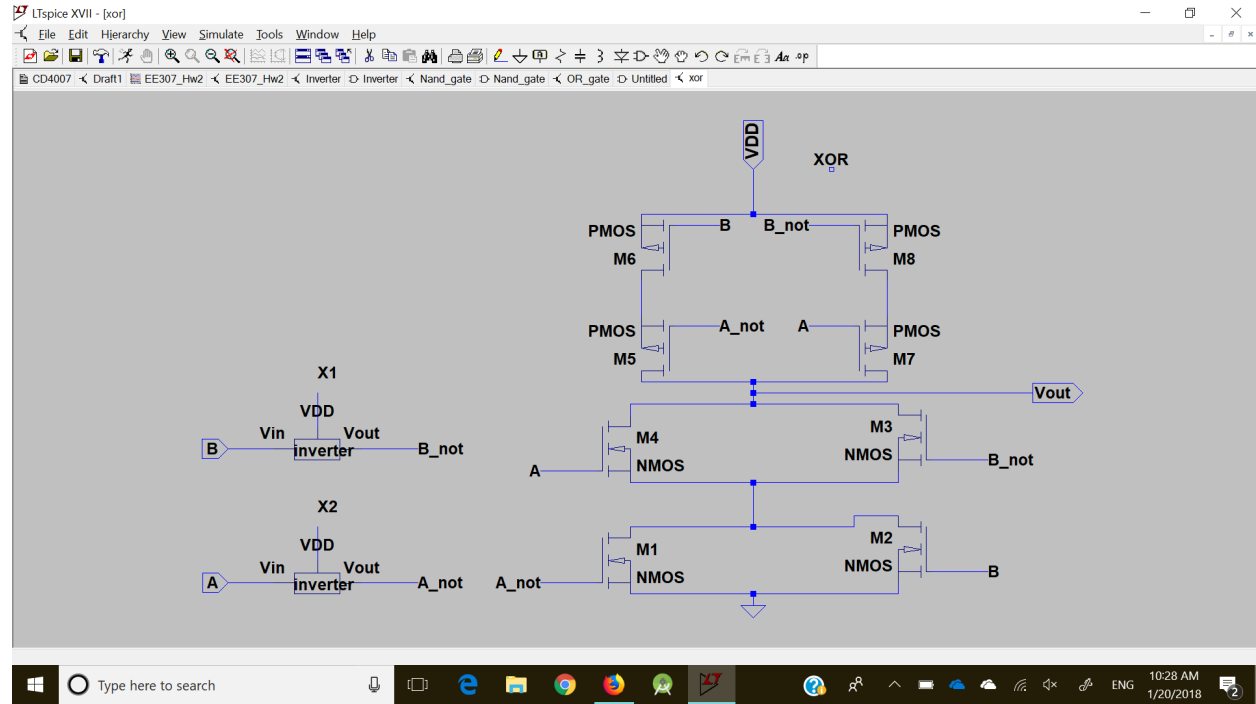


a.



b.

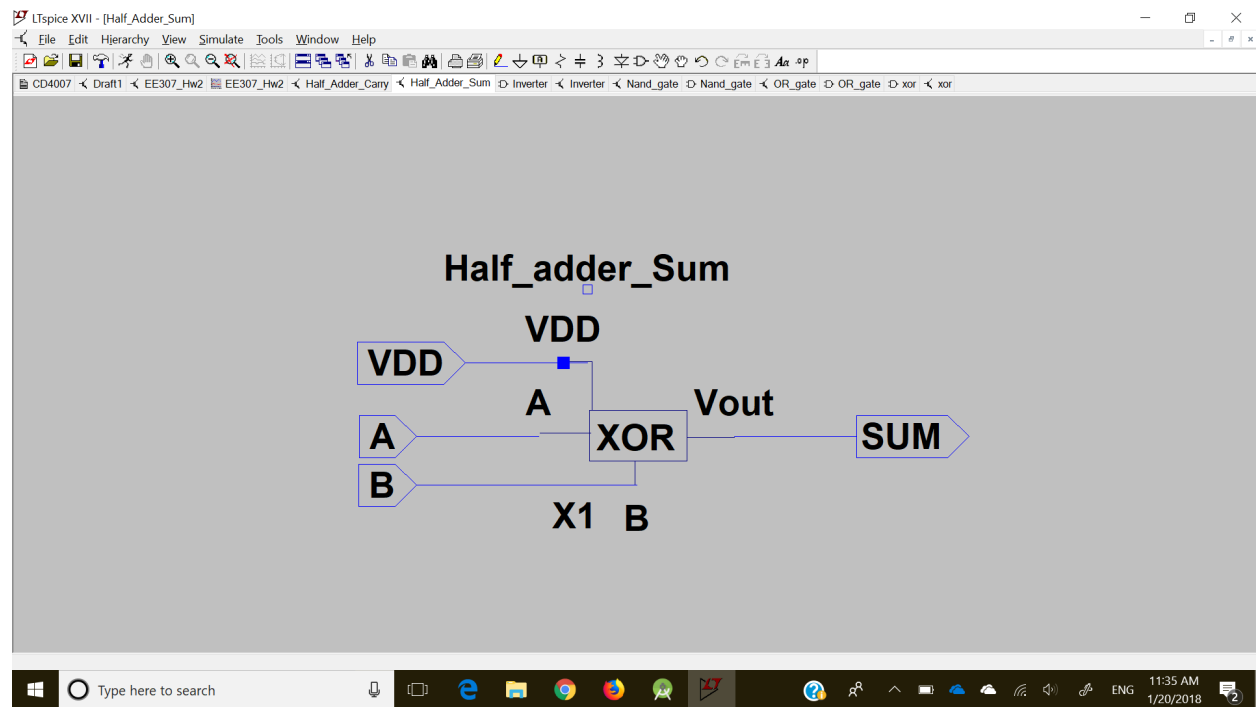
Inputs		Output		Output Pull up network	Pull down network
A	B				
0	0	0	OFF		ON
0	1	1	ON		OFF
1	0	1	ON		OFF
1	1	1	ON		OFF



d.

5. I want to eat a cookie...

a. I did it.



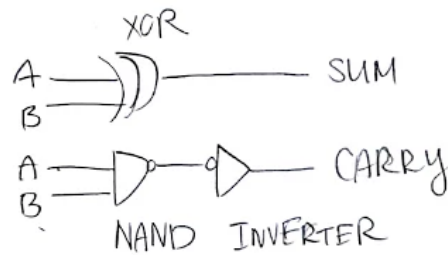
b.

# 5b. Half adder summing circuit

i) Truth Table

Input		Output	
A	B	S	C
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

ii) Half adder carry circuit



i)

A	B	Sum
0	0	0
0	1	1
1	0	1
1	1	0

ii)

A	B	Sum
0	0	0
0	1	1
1	0	1
1	1	0

like XOR

i)

A	B	Carry
0	0	0
0	1	0
1	0	0
1	1	1

ii)

A	B	Carry
0	0	0
0	1	0
1	0	0
1	1	1

like AND

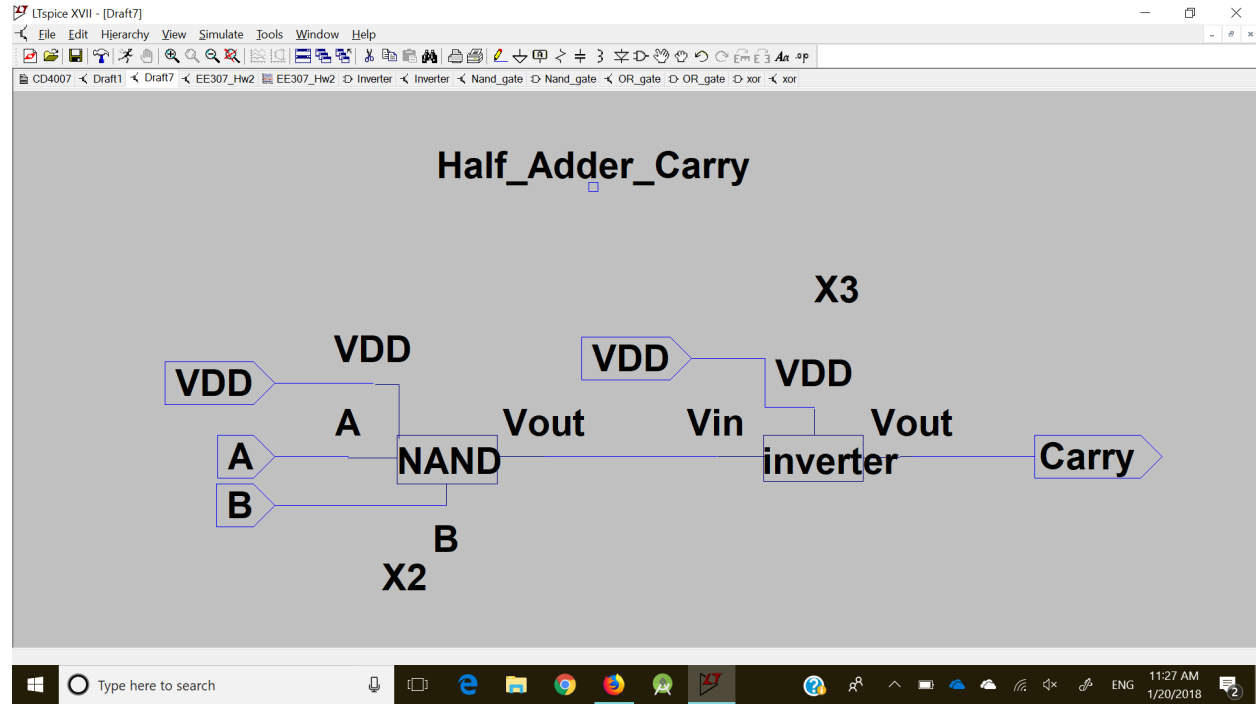
## Full adder sum

d)

Input			Output
A	B	Cin	Sum
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

A	BCin			
	00	01	11	10
0	0	1	0	1
1	1	0	1	0

$$S = \bar{A}\bar{B}C_{in} + \bar{A}B\bar{C}_{in} + A\bar{B}\bar{C}_{in} + ABC_{in}$$



c.

d.