

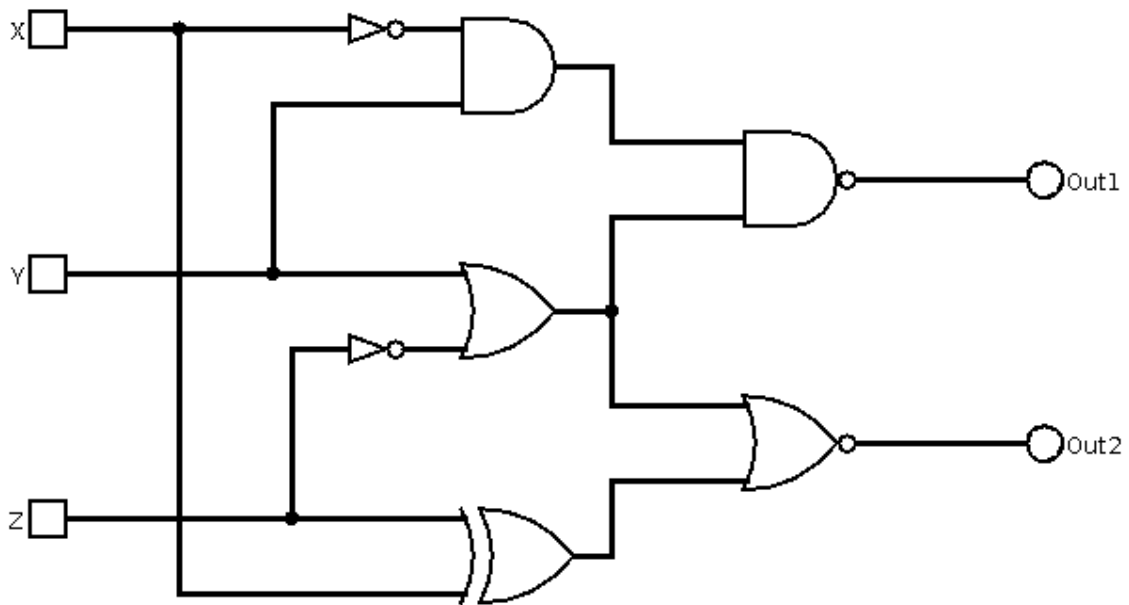
3. Construct an OR gate using only NAND gate(s).

Hint: by De Morgans law, $X \mid Y \equiv \sim (\sim X \& \sim Y)$.

4. Construct an XOR gate using only NAND gates.

5. Fill in the truth table for the following circuit.

X	Y	Z	out ₁	out ₂
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		



6. Construct a circuit that implements the following truth table. You may use any of the following one- or two-input gates: NOT, AND, OR, XOR, NAND, NOR, XNOR.

X	Y	Z	out ₁	out ₂
0	0	0	0	0
0	0	1	1	1
0	1	0	1	1
0	1	1	1	0
1	0	0	0	1
1	0	1	0	1
1	1	0	1	1
1	1	1	0	0