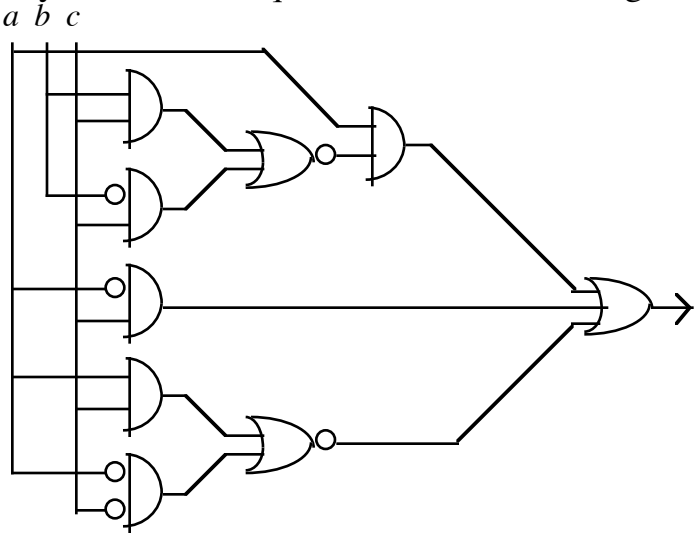
CSC258 Computer Organization 2015 fall
Assignment 1 due Thu.Oct.8 at 6pm in BA2220

1[10] Prove that the following three expressions are equivalent.

if x **then** y **else** z
if y **then** $z \vee x$ **else** $z > x$
if z **then** $x \leq y$ **else** $x \wedge y$

2[10] Find the simplest circuit you can that's equivalent to the following circuit.



3[5] Prove that $\triangle$ is complete.

4[10] Prove that $\neq$ is not complete. Hint: Find a systematic way to show all functions that can be created from $\neq$, and show some function that is not created. Or find a property of all functions that can be created from $\neq$, and show some function that does not have that property.

5[15] Design a circuit whose 4 bits of input represent a number x from 0 to 15, and whose bits of output represent two numbers y and z such that $x = y \times z$ and $y \geq z$, and of all pairs whose product is x, the pair y and z has the smallest sum.