



Figure 1: Diagram for question 3

Quiz 3

Wed Feb 22

You have up to 20 minutes. You may not use text book or notes.

1. (8 points) For any Boolean values X and Y , can $(X + Y)'$ be rewritten as $X' + Y'$?
yes / no

Justify your answer by creating a truth table to show the results of the two expressions for all possible values of X and Y .

2. (6 points) In algebra, an operator is **commutative** if the order of its operands can be reversed. For example, standard addition is commutative because $A + B = B + A$ for all numbers A and B . Division is **not** commutative. For example, $4 \div 5 \neq 5 \div 4$ or in decimal notation, $0.8 \neq 1.25$.

Which of the Boolean operators (AND, OR, XOR) are commutative?

3. (6 points) Write the Boolean expression implemented by the following circuit diagram.
