



Figure 1: Diagram for question 3

Quiz 3

Wed Oct 11

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

1. In algebra, an operator is **commutative** if the order of its operands can be switched. 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? (Choose none, one, two, or all of them.)

2. 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 .

3. Write the Boolean expression implemented by the circuit diagram shown in Figure 1.
