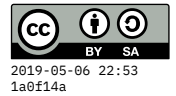


Quiz 3

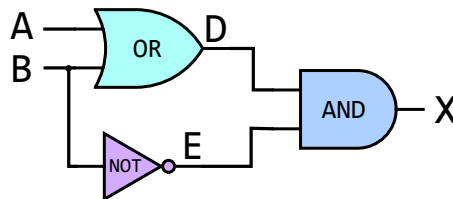
6 March 2019



Solutions

Questions

- Complete the truth table that corresponds to the following circuit. What would be the value of X in each row?



| A | B | $E=B'$ | $D=A+B$ | $X=D \cdot E$ |
|---|---|----------|----------|---------------|
| 0 | 0 | <u>1</u> | <u>0</u> | <u>0</u> |
| 0 | 1 | <u>0</u> | <u>1</u> | <u>0</u> |
| 1 | 0 | <u>1</u> | <u>1</u> | <u>1</u> |
| 1 | 1 | <u>0</u> | <u>1</u> | <u>0</u> |

- For any Boolean values X and Y, can $(X \cdot Y)'$ be rewritten as $X' \cdot Y'$? 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. As a reminder, the order of operations is that parentheses precede NOT, which precedes AND.

No, they are not the same. Compare the columns labeled with * below.

| X | Y | $X \cdot Y$ | * | $(X \cdot Y)'$ | X' | Y' | * | $X' \cdot Y'$ |
|---|---|-------------|---|----------------|------|------|---|---------------|
| 0 | 0 | 0 | | 1 | 1 | 1 | | 1 |
| 0 | 1 | 0 | | 1 | 1 | 0 | | 0 |
| 1 | 0 | 0 | | 1 | 0 | 1 | | 0 |
| 1 | 1 | 1 | | 0 | 0 | 0 | | 0 |