Case Study 3 — A Boolean Circuit Equivalence

Step 1. Boolean Circuit analysis (a & b)
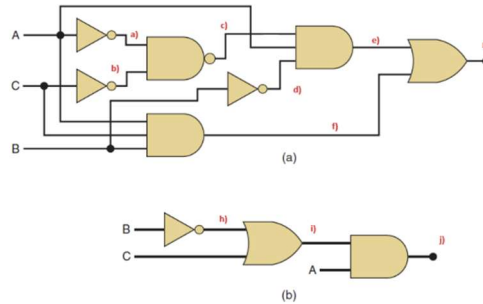
(a) Circuit A - Logic Breakdown

the inputs:

A, B, C (each either 0 or 1)

The middle steps:

(a)

(b)

- a) NOT A → not A
- b) NOT C → not C
- c) not A and not C
- d) NOT C again → not C
- e) (not A and not C) and not C
- f) B and C
- g) Final output X = ((not A and not C) and not C) or (B and C)

(b) Circuit B - Logic Breakdown

- h) NOT B → not B
- i) not B or C
- j) Final output Y = A and (not B or C)