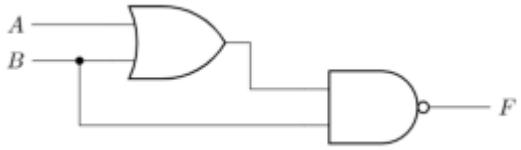
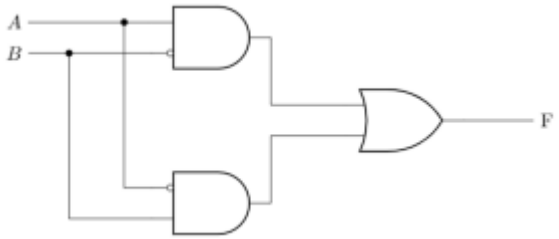
Boolean 0

1. Find Boolean expressions that are equivalent to the following logic diagrams. DO NOT SIMPLIFY!

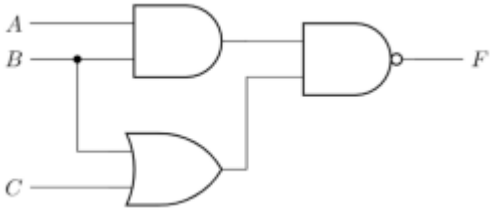
a. $F = \overline{(A + B) \times B}$



b. $F = (A \times \overline{B}) + (\overline{A} \times B)$

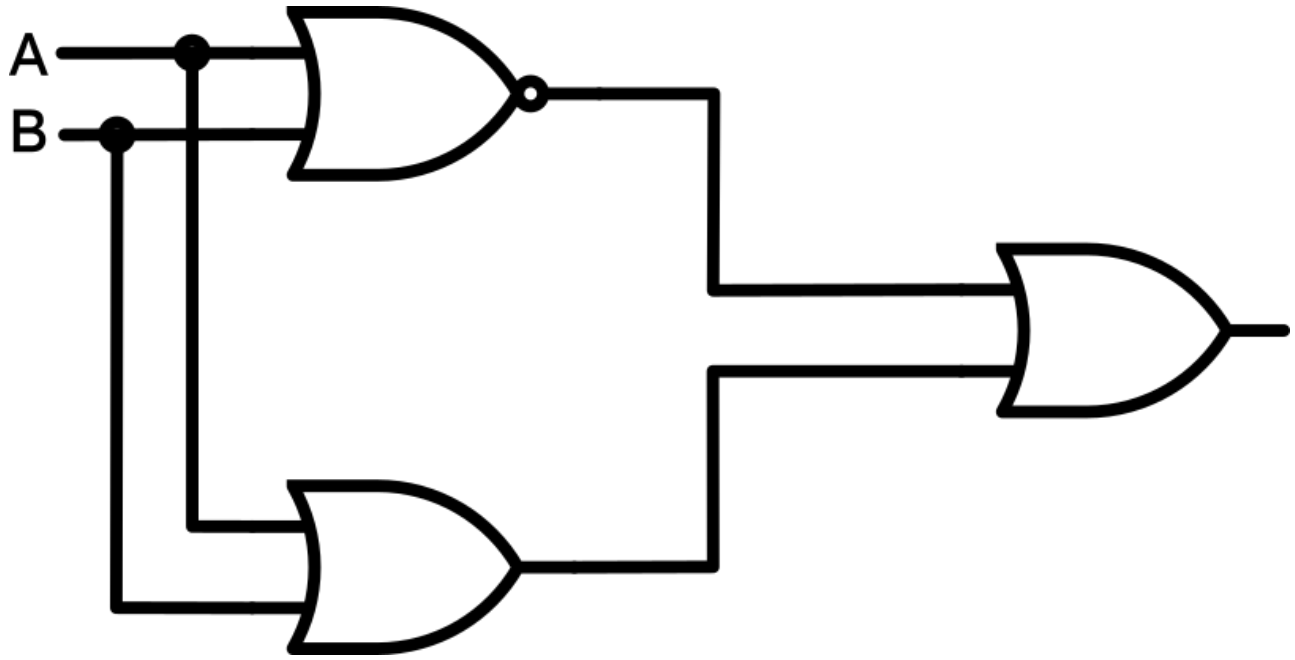


c. $F = \overline{(A \times B) \times (B + C)}$

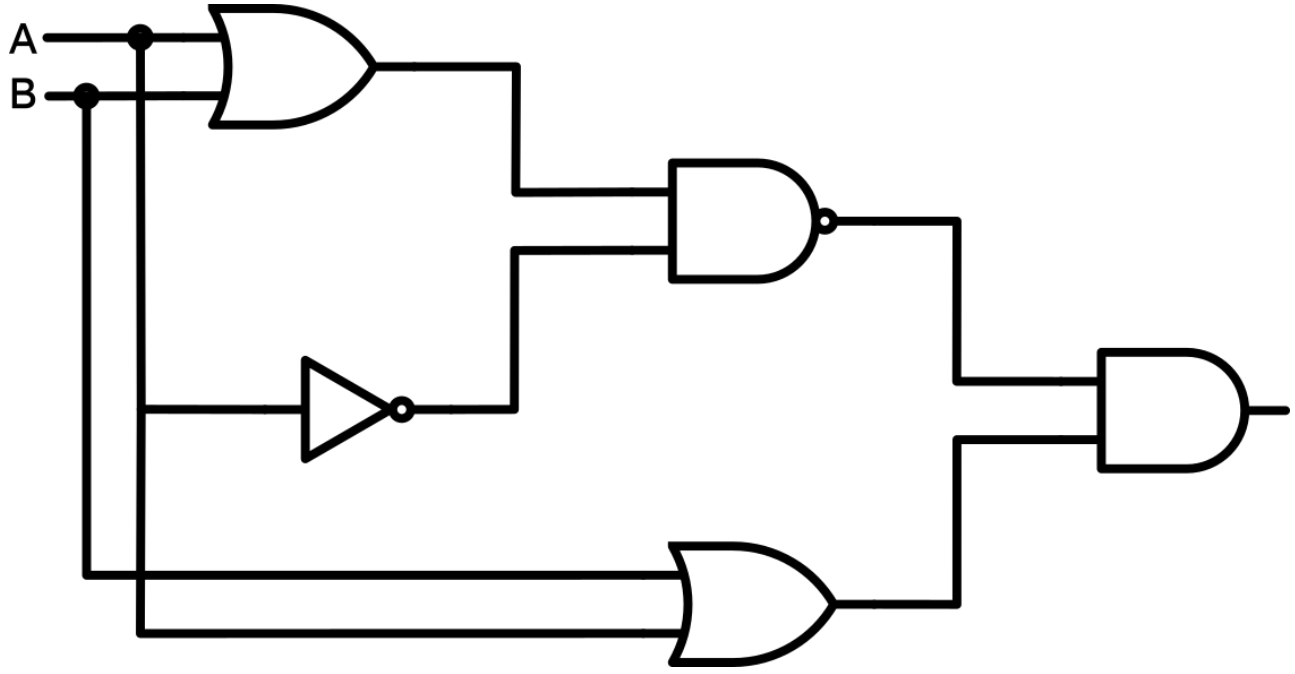


2. Draw logic circuits that are equivalent to the following Boolean expressions. DO NOT SIMPLIFY!

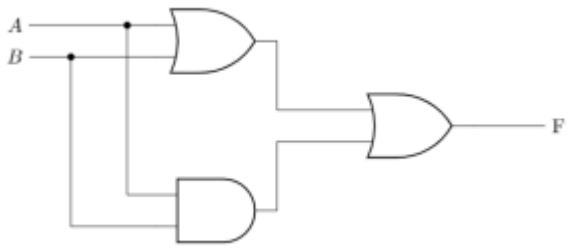
a. $\overline{(A + B)} + (A + B)$



b. $\overline{(A + B) \times A \times (B + A)}$



3. For the following logic circuit:



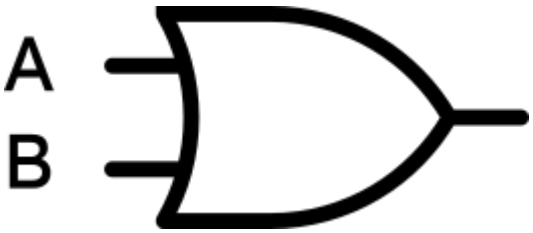
a. Find an equivalent Boolean expression

- (A + B) + (A × B) = F

b. Reduce the expression to its simplest form

- (A + B) + (A × B) =
- ((A + B) + A) × ((A + B) + B) =
- (A + B) × (A + B) =
- (A + B)

c. Convert the simple expression into a logic circuit that is equivalent to the original circuit.



4. Complete the truth table to show that $\overline{(A \times B)} = \overline{A} + \overline{B}$

A	**B**	**(A × B)**	$\overline{\textbf{(A × B)}}$	$\overline{\textbf{A}}$	$\overline{\textbf{B}}$	$\overline{\textbf{A}} + \overline{\textbf{B}}$
1	1	1	0	0	0	0
1	0	0	1	0	1	1
0	1	0	1	1	0	1
0	0	0	1	1	1	1