Extra

Exercise 4a.1:

Prove the Associate Law for A(BC) = (AB)C using truth table.

A	B	C	AB	BC	A(BC)	(AB)C
0	0	0	0	0	0	0
0	0	1	0	0	0	0
0	1	0	0	0	0	0
0	1	1	0	1	0	0
1	0	0	0	0	0	0
1	0	1	0	0	0	0
1	1	0	1	0	0	0
1	1	1	1	1	1	1

Extra

Self-Test:

Prove that $\overline{AB}$ is equal or not equal with $\overline{A}\,\overline{B}$ by using the truth table.

Solution:

A	B	$\overline{A}$	$\overline{B}$	AB	$\overline{A}\,\overline{B}$	$\overline{AB}$
0	0	1	1	0	1	1
0	1	1	0	0	0	1
1	0	0	1	0	0	1
1	1	0	0	1	0	0

$$\overline{AB} \neq \overline{A}\,\overline{B}$$

Extra

Exercise 4a.2:

Apply DeMorgan's theorems to each of the following expressions:

(a) $\overline{(A + B + C)D}$

(b) $\overline{ABC + DEF}$

(c) $\overline{A\overline{B} + \overline{C}D + EF}$

Extra

Exercise 4a.3:

Draw the logic circuit represented by each expression:

(i) $A\overline{B} + \overline{A}B$

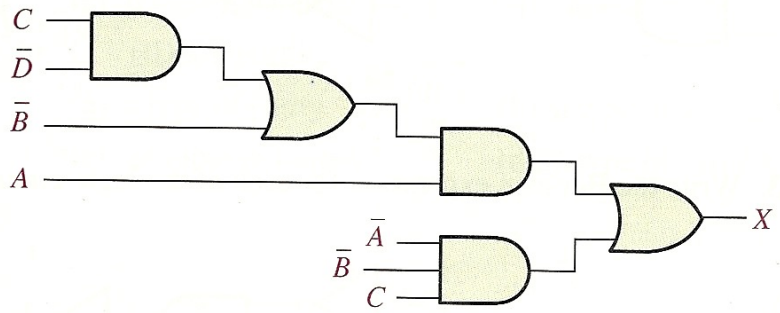
(ii) $AB + \overline{A}\,\overline{B} + \overline{A}BC$

(iii) $\overline{A}B(C + \overline{D})$

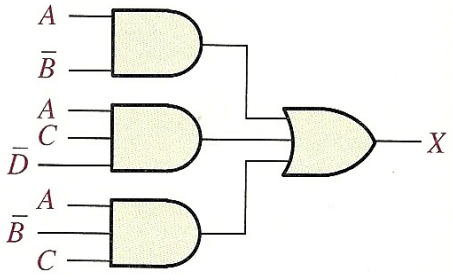
Extra

Exercise 4a.4:

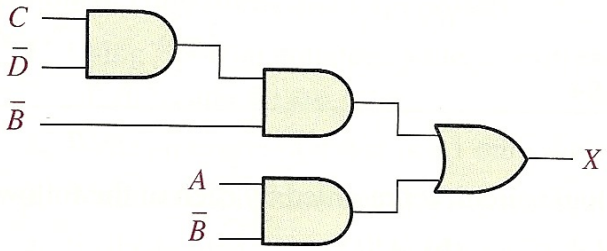
Determine which of the logic circuits are equivalent.



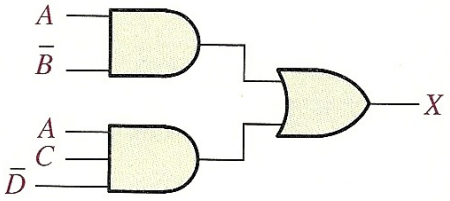
(a)



(b)



(c)



(d)