

In1020 - Porter og funksjoner

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Dagens forelesning

- Ukesoppgaver
- Porter (repetisjon)
- Hvordan analysere kretser



Hva er en port og hva er en funksjon?

bruk 1 min på å tenke selv på dette.



Én port:

- har alltid én logisk funksjon
- kan ha matematisk funksjon



Én funksjon:

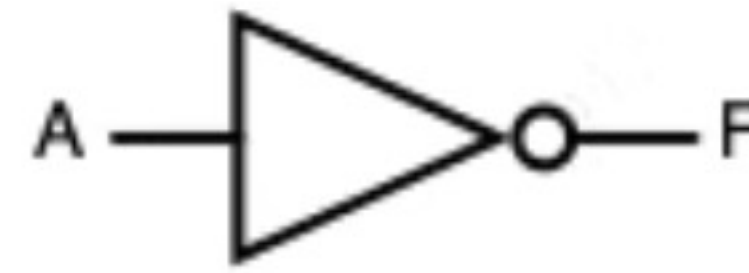
- kan være en logisk funksjon
- kan være en matematisk funksjon
- inneholder én eller flere porter



INV - port

$$F = A'$$

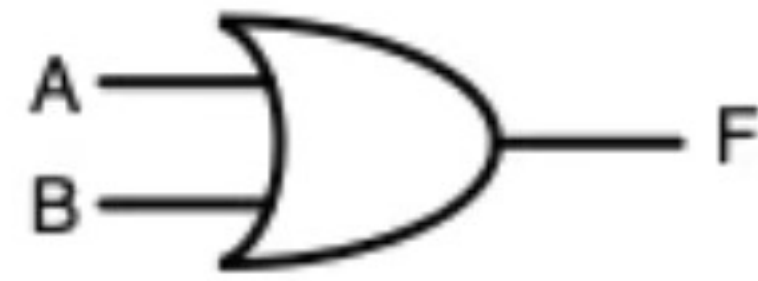
A	F
0	1
1	0



OR - port

$$F = A + B$$

A	B	F
0	0	0
0	1	1
1	0	1
1	1	1



AND - port

$$F = AB$$

A	B	F
0	0	0
0	1	0
1	0	0
1	1	1



NOR - port

$$F = (A + B)'$$

A	B	F
0	0	1
0	1	0
1	0	0
1	1	0



NAND - port

$$F = (AB)'$$

A	B	F
0	0	1
0	1	1
1	0	1
1	1	0



XOR - port

$$F = A \oplus B$$

A	B	F
0	0	0
0	1	1
1	0	1
1	1	0



XNOR - port

$$F = (A \oplus B)'$$

A	B	F
0	0	1
0	1	0
1	0	0
1	1	1

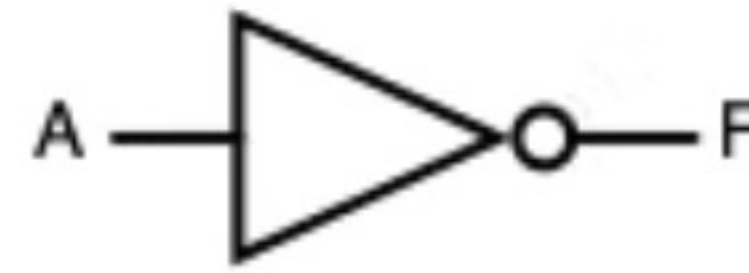


Alle logiske port-typer

INV - port

$$F = A'$$

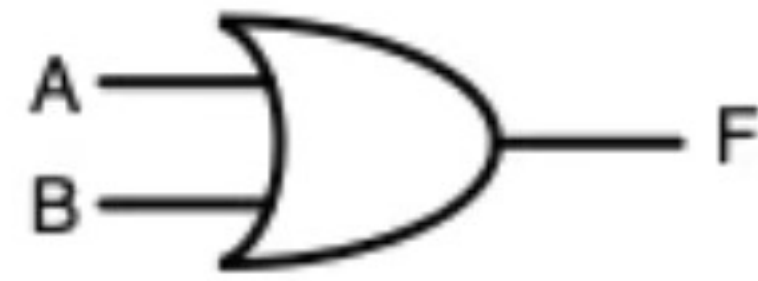
A	F
0	1
1	0



OR - port

$$F = A + B$$

A	B	F
0	0	0
0	1	1
1	0	1
1	1	1



AND - port

$$F = AB$$

A	B	F
0	0	0
0	1	0
1	0	0
1	1	1



NOR - port

$$F = (A + B)'$$

A	B	F
0	0	1
0	1	0
1	0	0
1	1	0



NAND - port

$$F = (AB)'$$

A	B	F
0	0	1
0	1	1
1	0	1
1	1	0



XOR - port

$$F = A \oplus B$$

A	B	F
0	0	0
0	1	1
1	0	1
1	1	0



XNOR - port

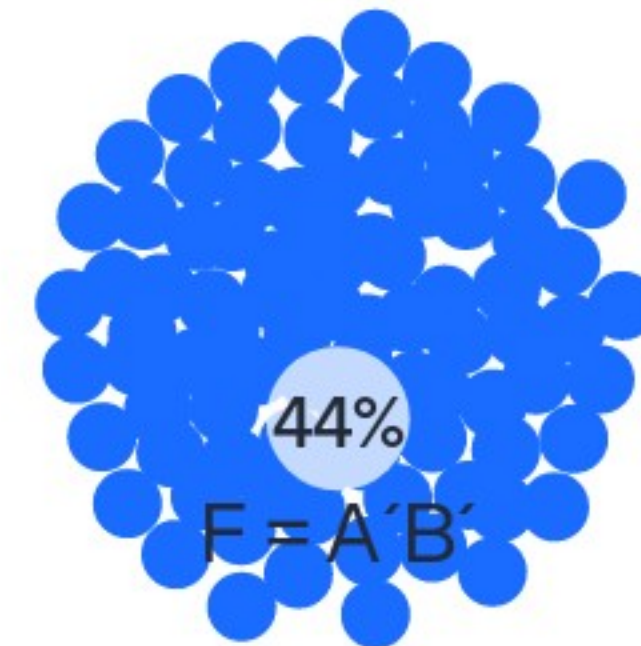
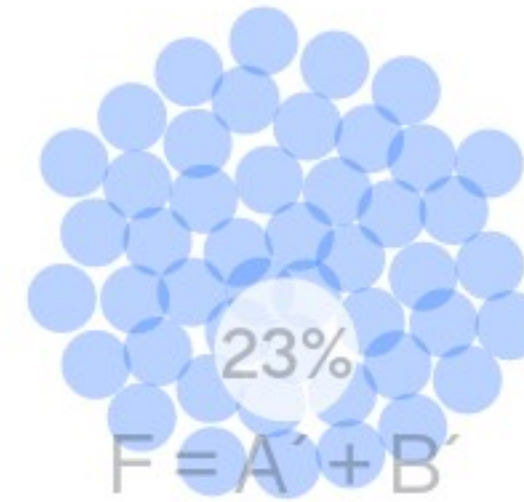
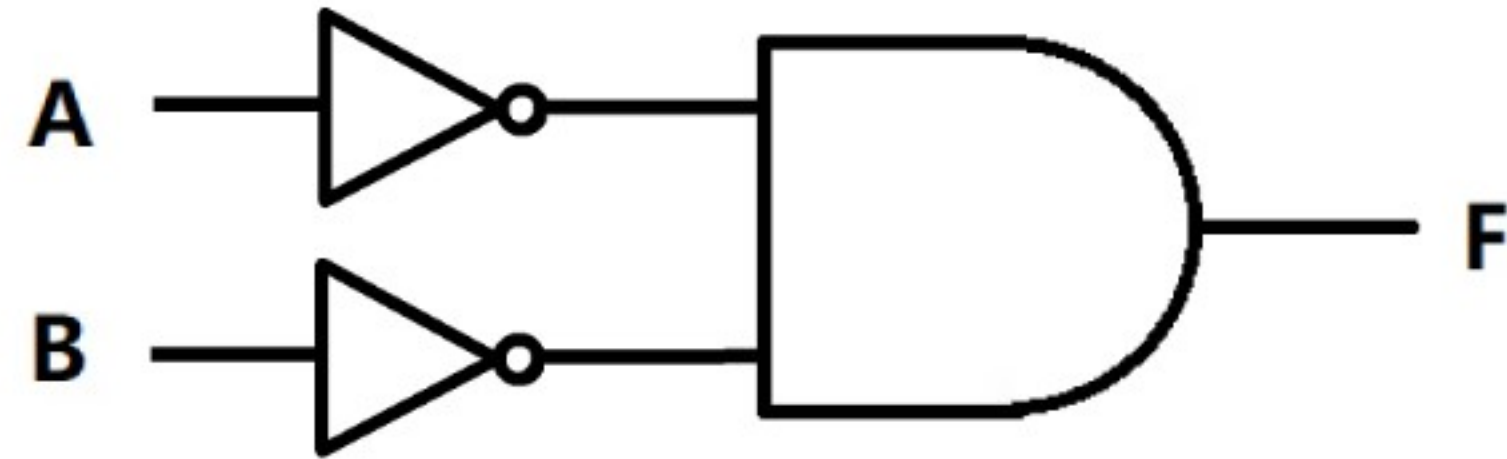
$$F = (A \oplus B)'$$

A	B	F
0	0	1
0	1	0
1	0	0
1	1	1



Porter som har en matematisk funksjon

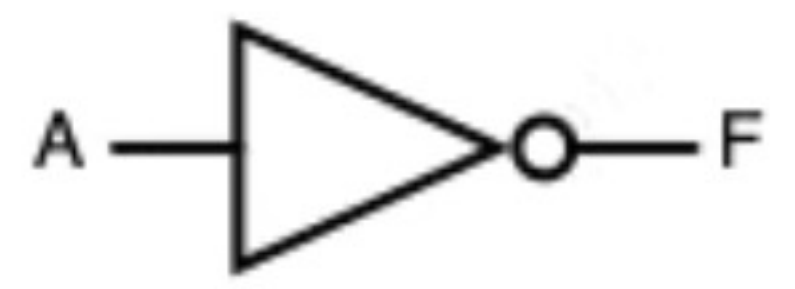
Hva er funksjonen til denne kretsen



INV - port

$$F = A'$$

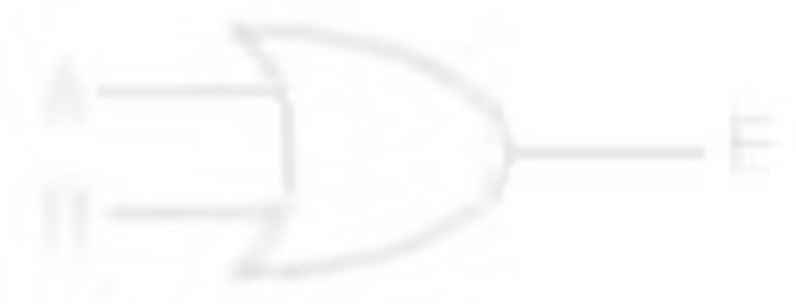
A	F
0	1
1	0



OR - port

$$F = A + B$$

A	B	F
0	0	0
0	1	1
1	0	1
1	1	1



AND - port

$$F = AB$$

A	B	F
0	0	0
0	1	0
1	0	0
1	1	1



NOR - port

$$F = (A + B)'$$

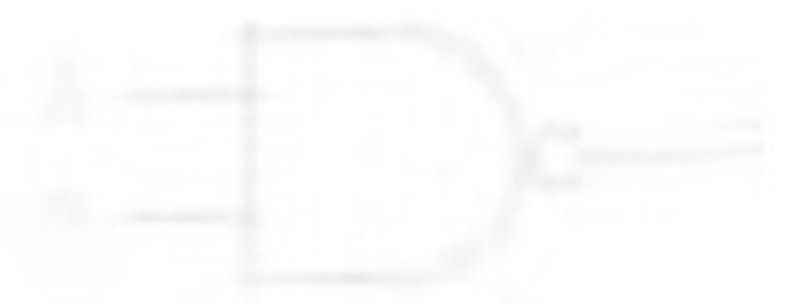
A	B	F
0	0	1
0	1	0
1	0	0
1	1	0



NAND - port

$$F = (AB)'$$

A	B	F
0	0	1
0	1	1
1	0	1
1	1	0



XOR - port

$$F = A \oplus B$$

A	B	F
0	0	0
0	1	1
1	0	1
1	1	0



XNOR - port

$$F = (A \oplus B)'$$

A	B	F
0	0	1
0	1	0
1	0	0
1	1	1



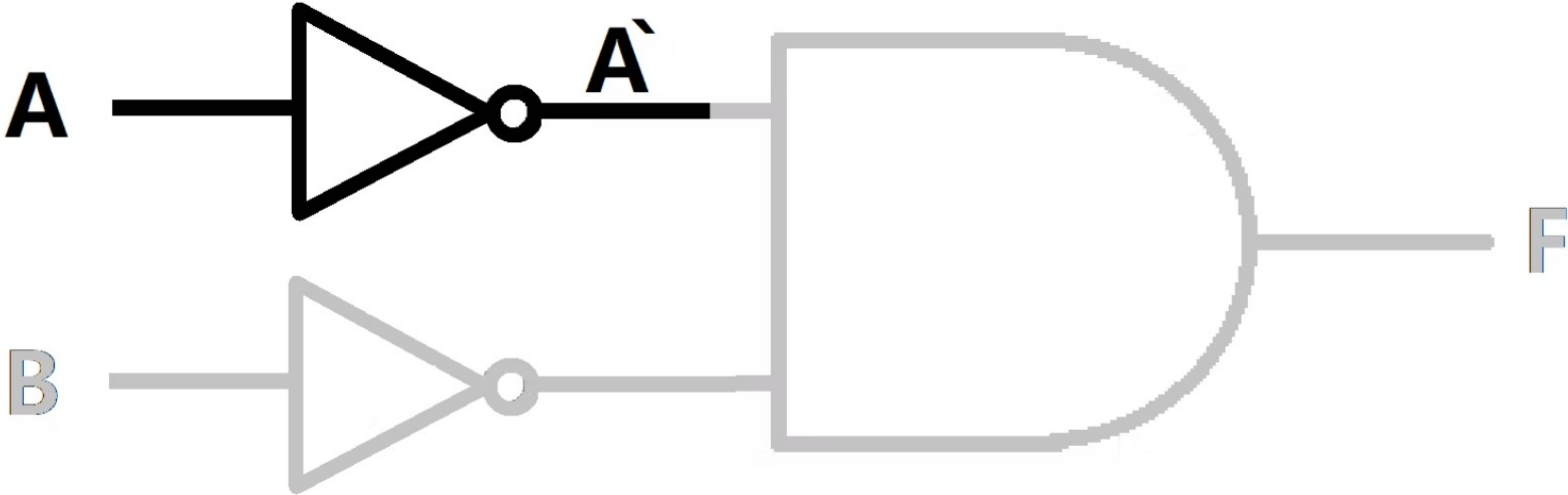
Relevante porter i denne sammenheng

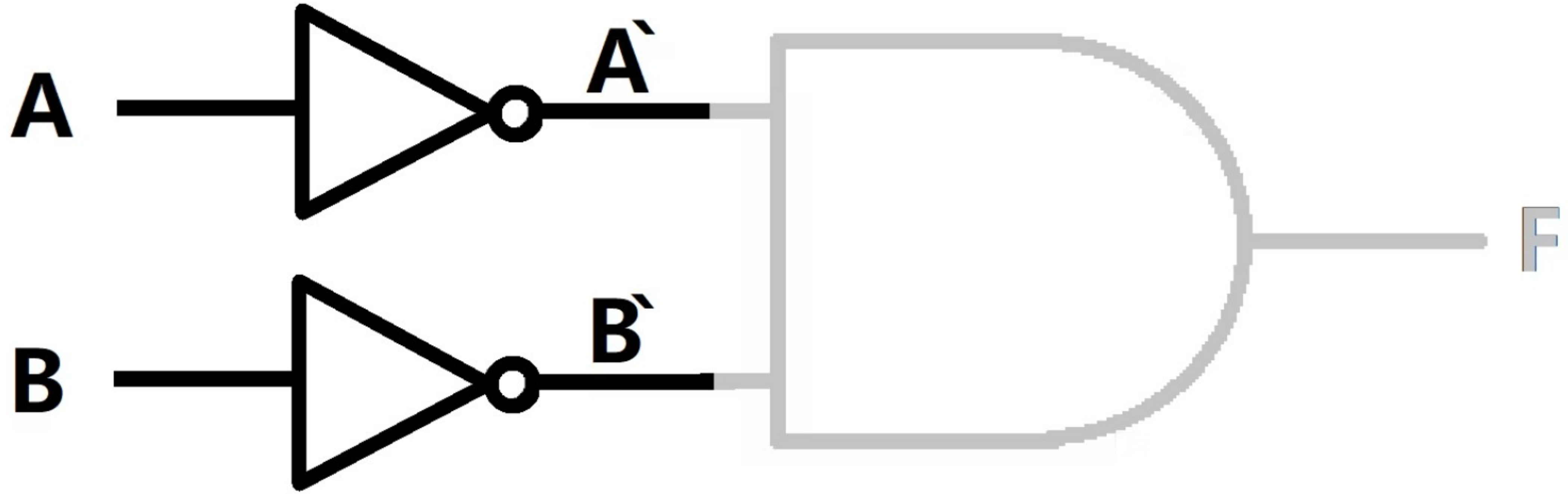
Spørsmål

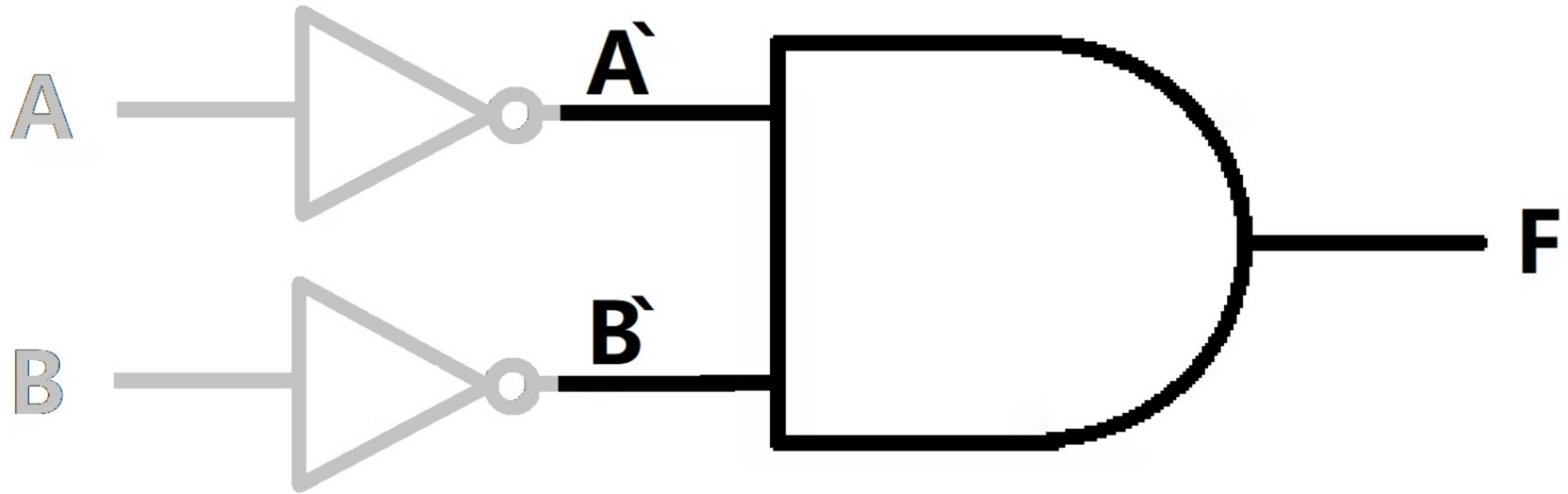
39 questions
63 upvotes

Kretsanalyse

- Fra venstre til høyre
- Fra inngang(er) til utgang(er)
- Fra høyre til venstre
- Fra utgang(er) til inngang(er)





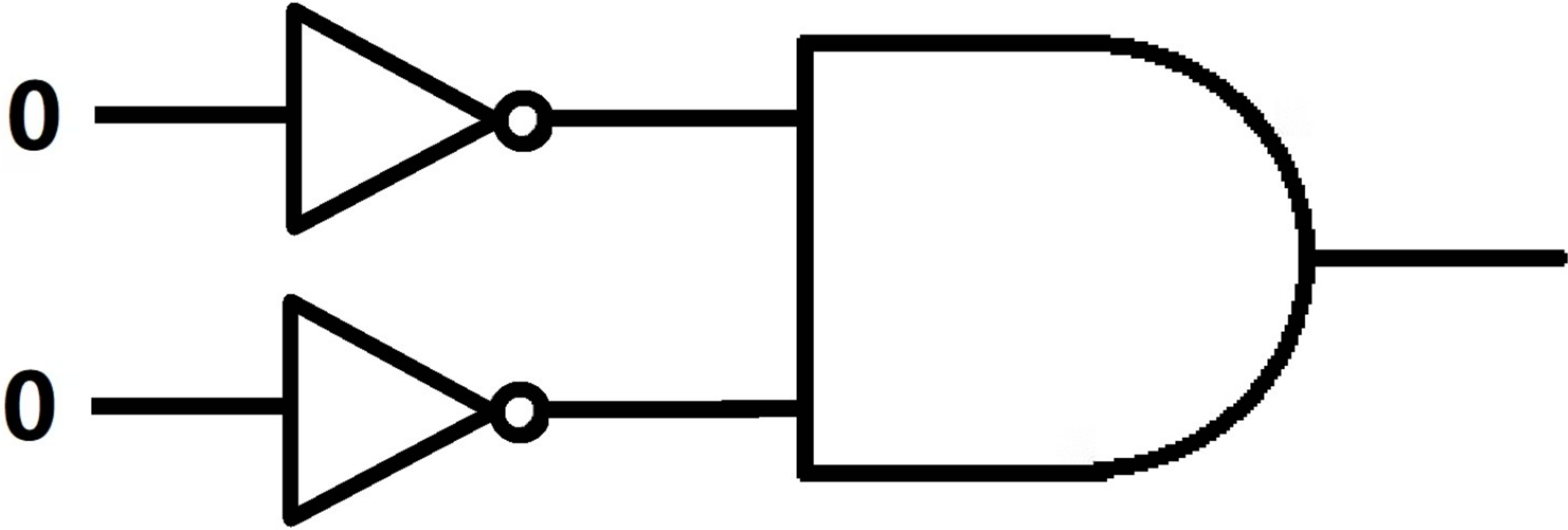


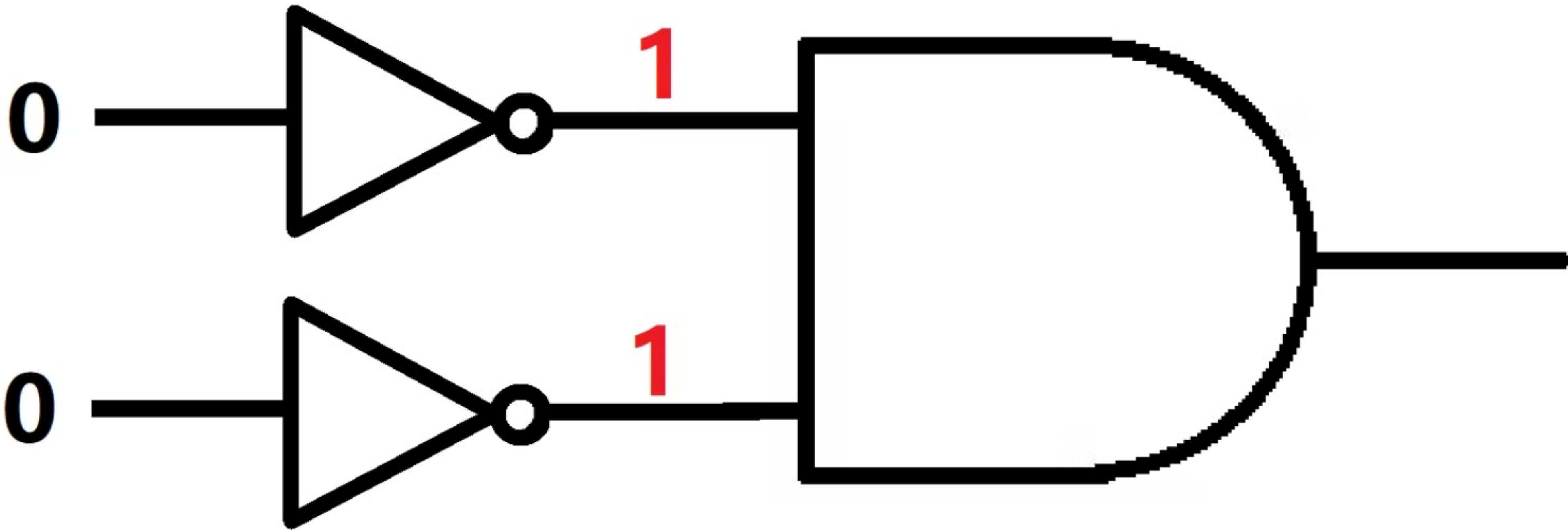
$$F = A'B'$$

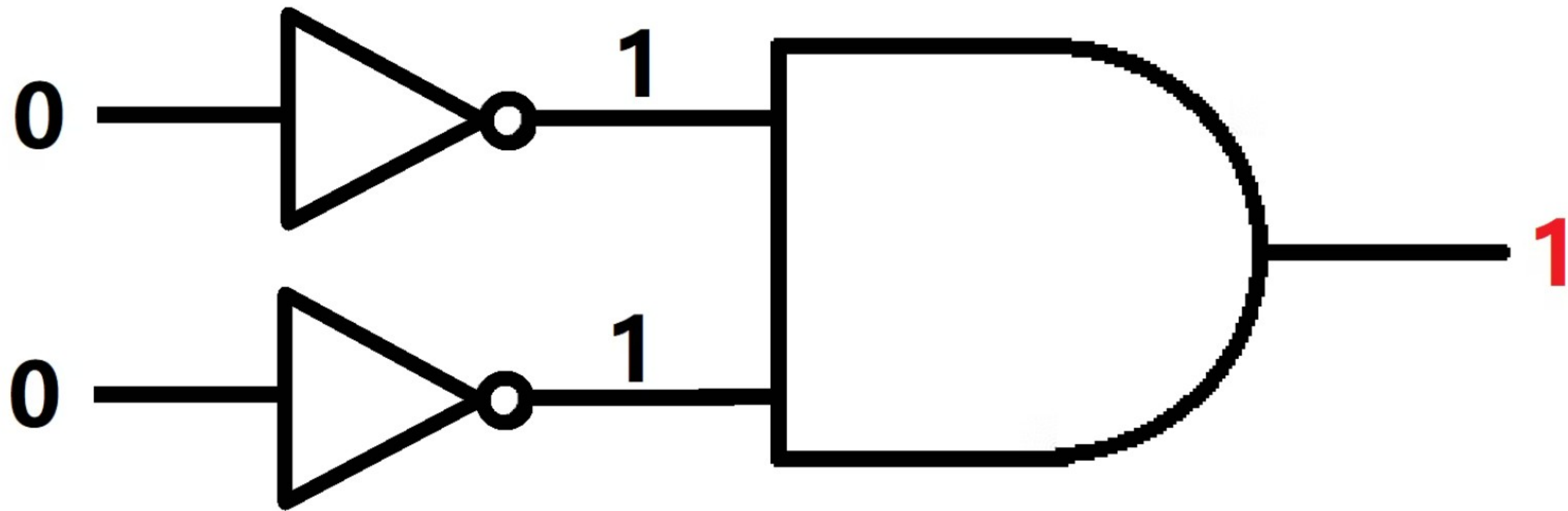
A	B	F
0	0	
0	1	
1	0	
1	1	

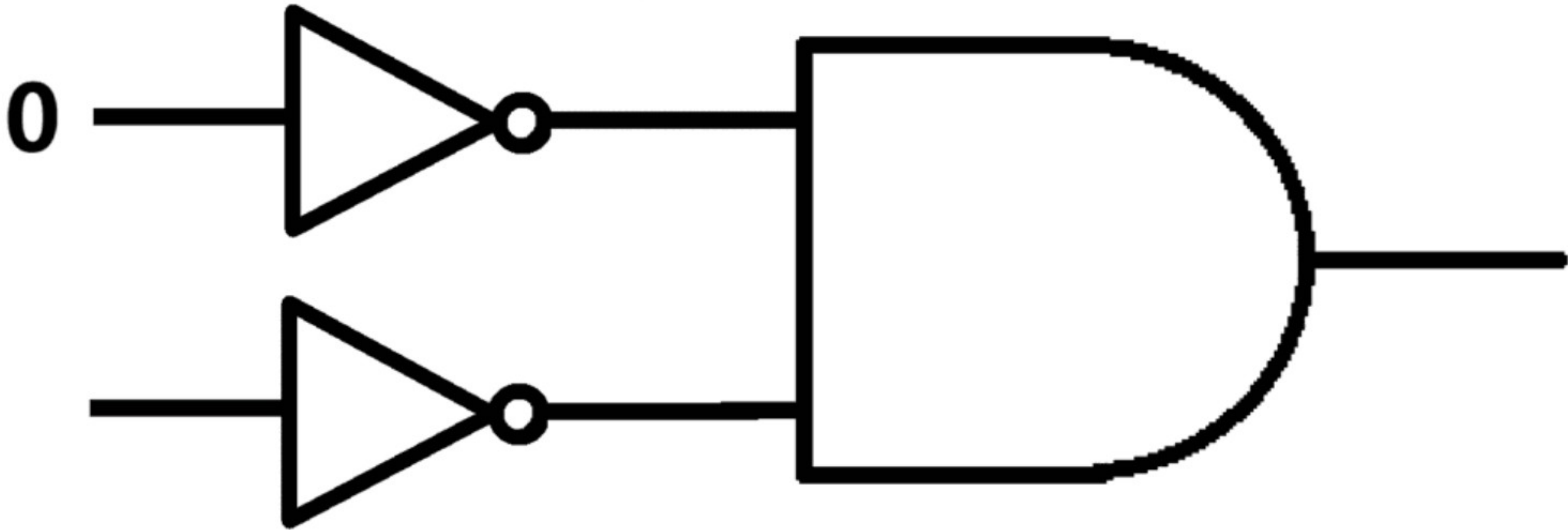
Sannhetsverditabellen for F?







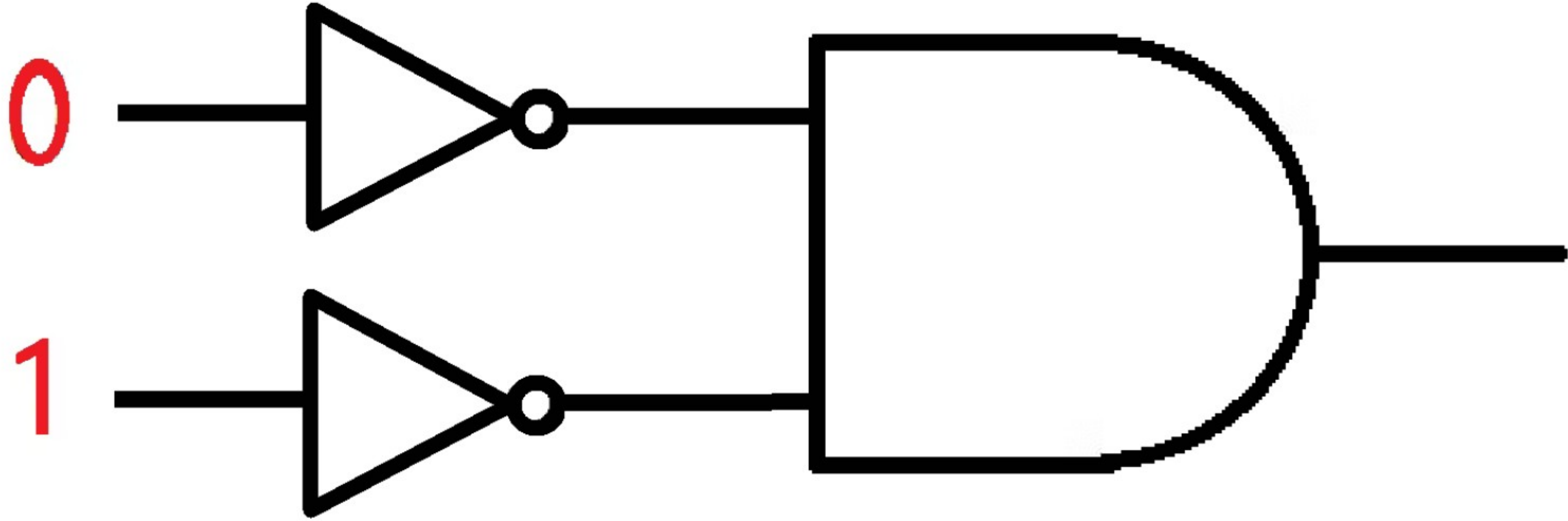


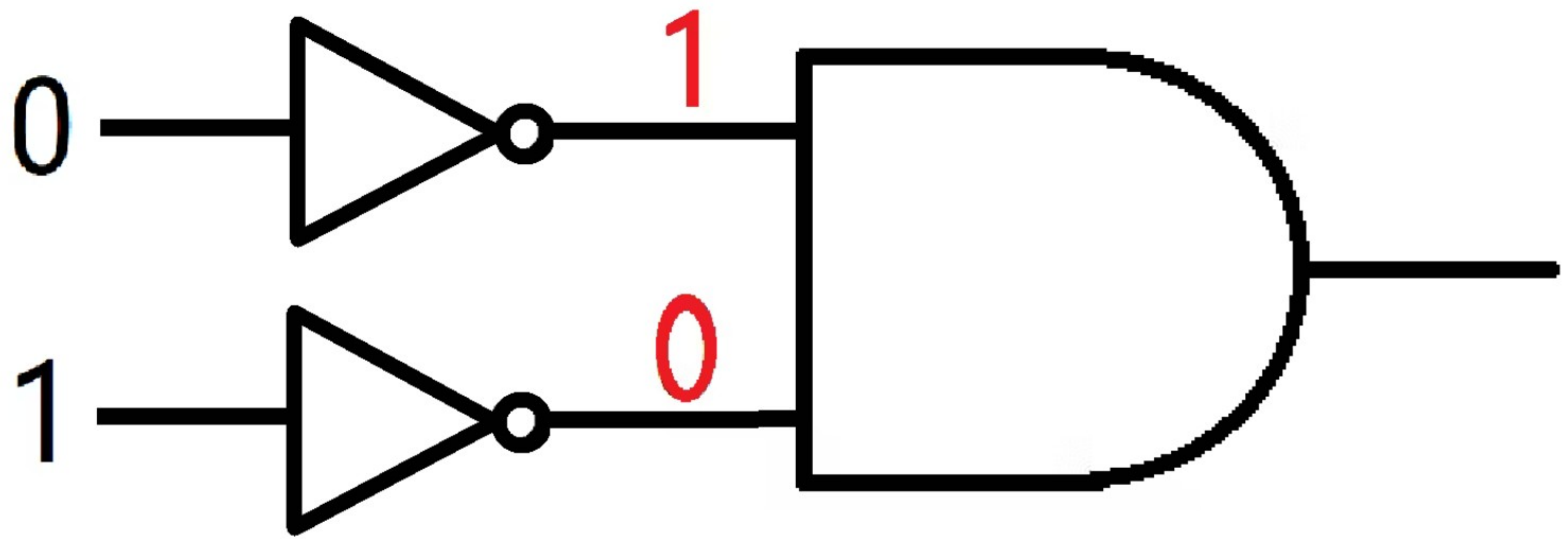


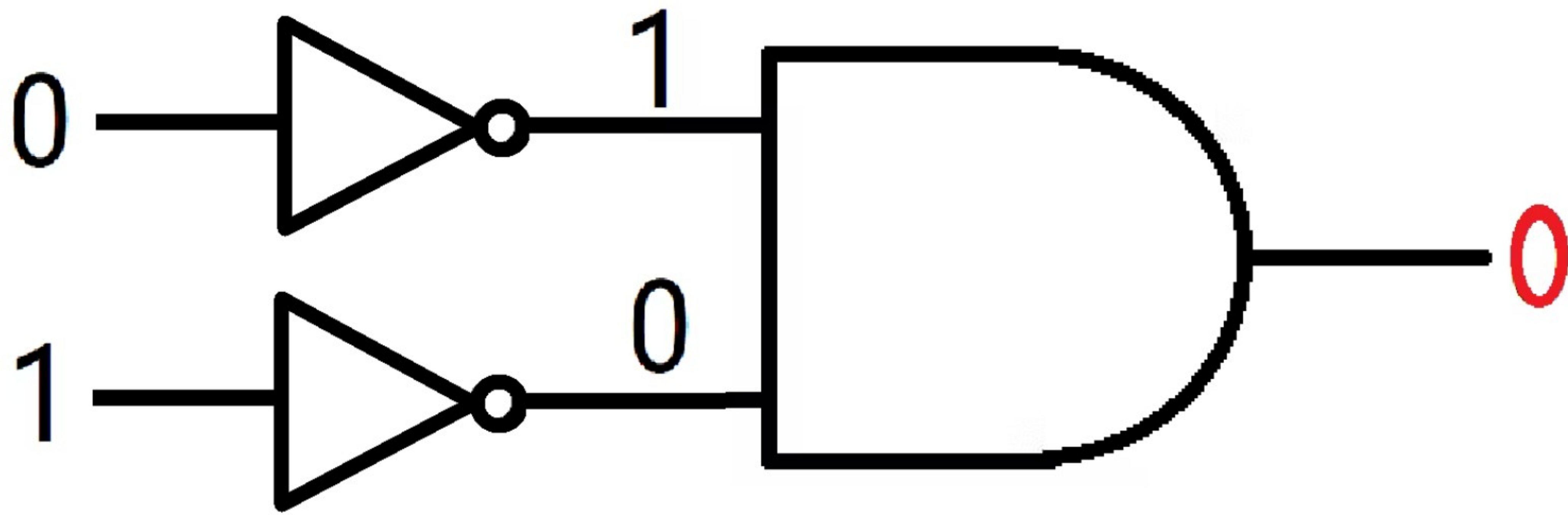
Interactive process

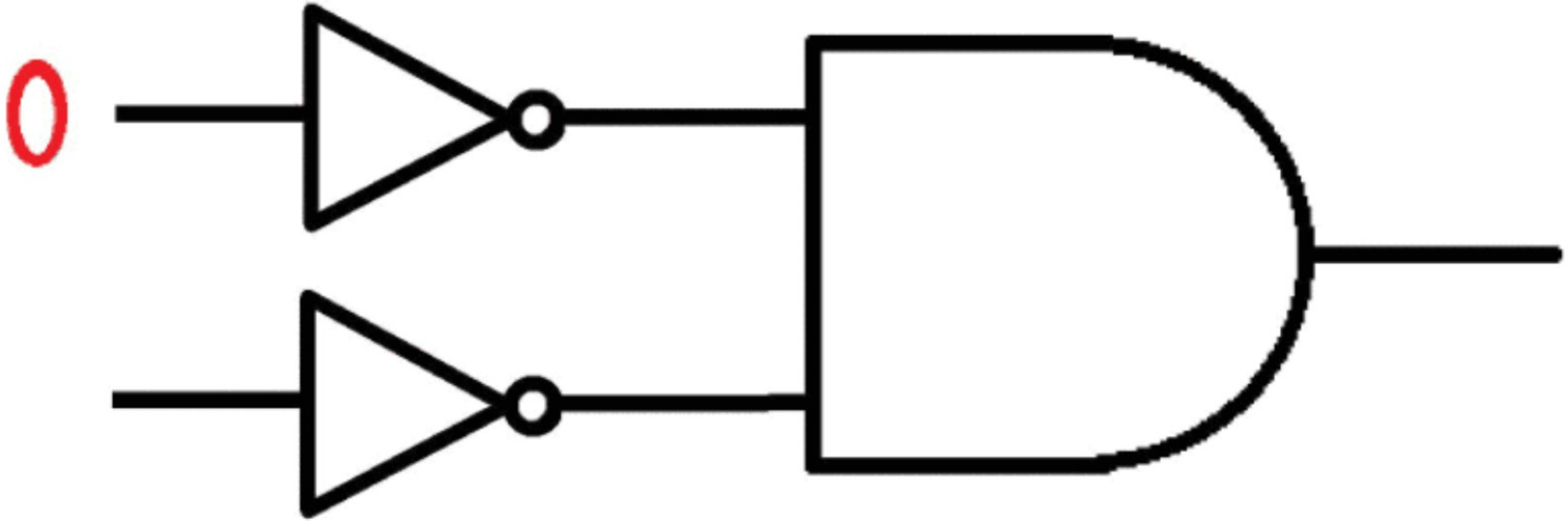


A	B	F
0	0	1
0	1	
1	0	
1	1	







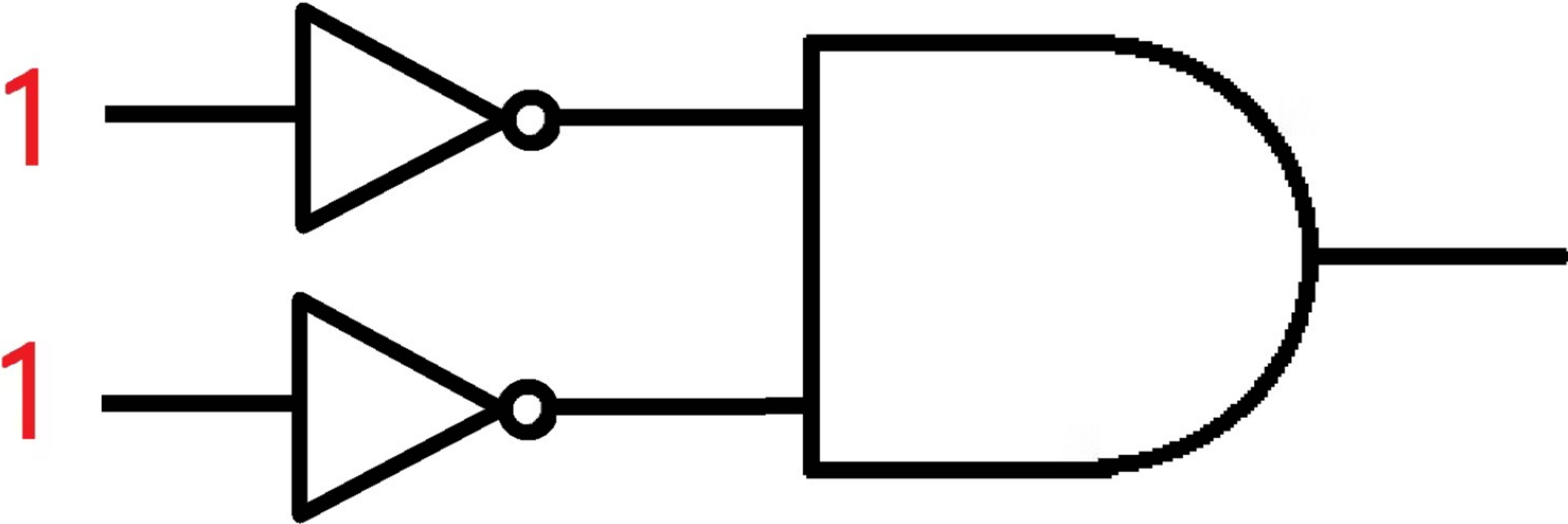


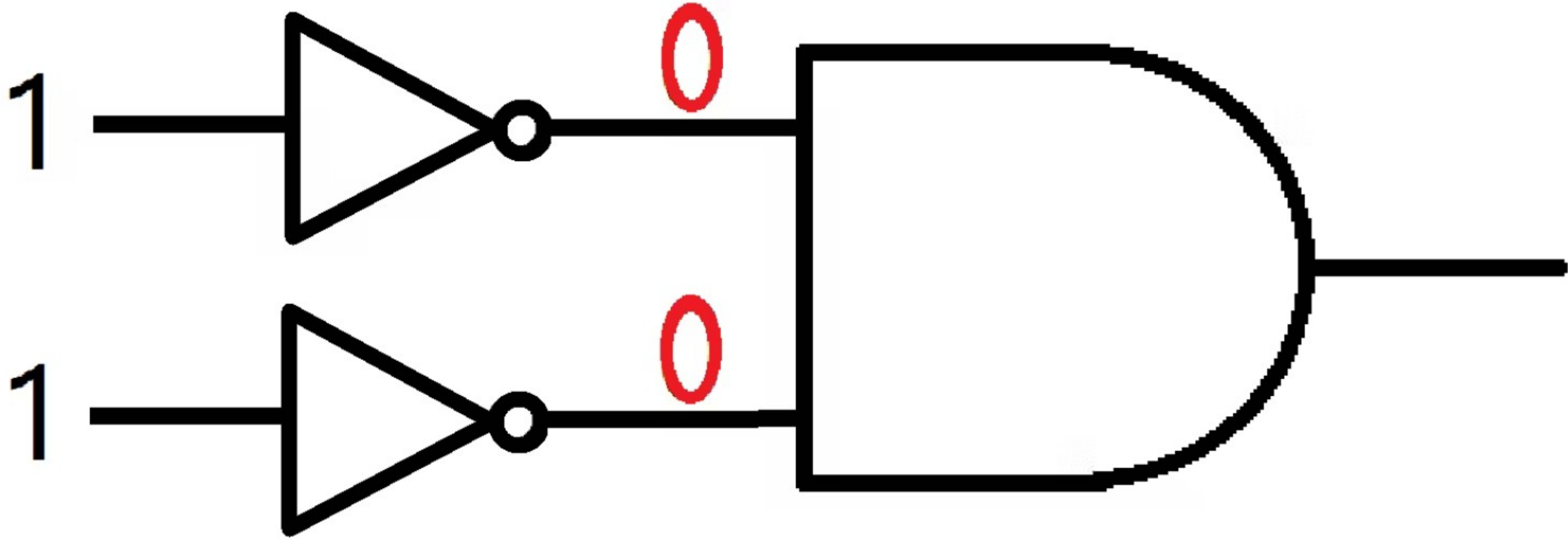
Interactive process

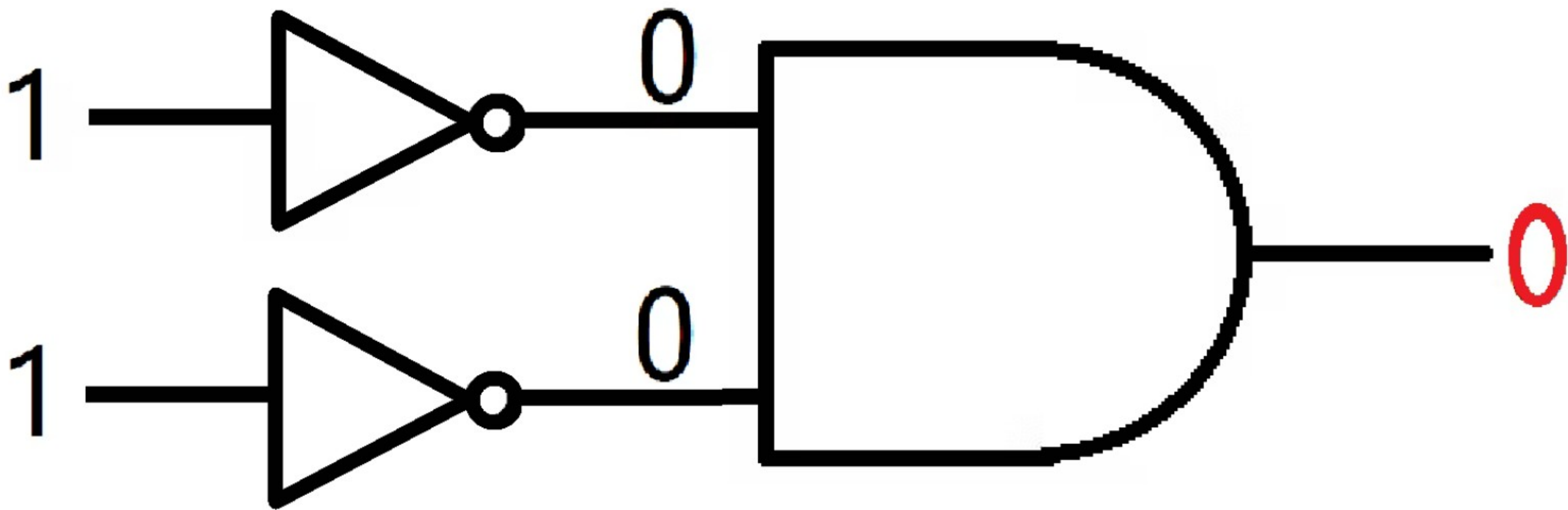


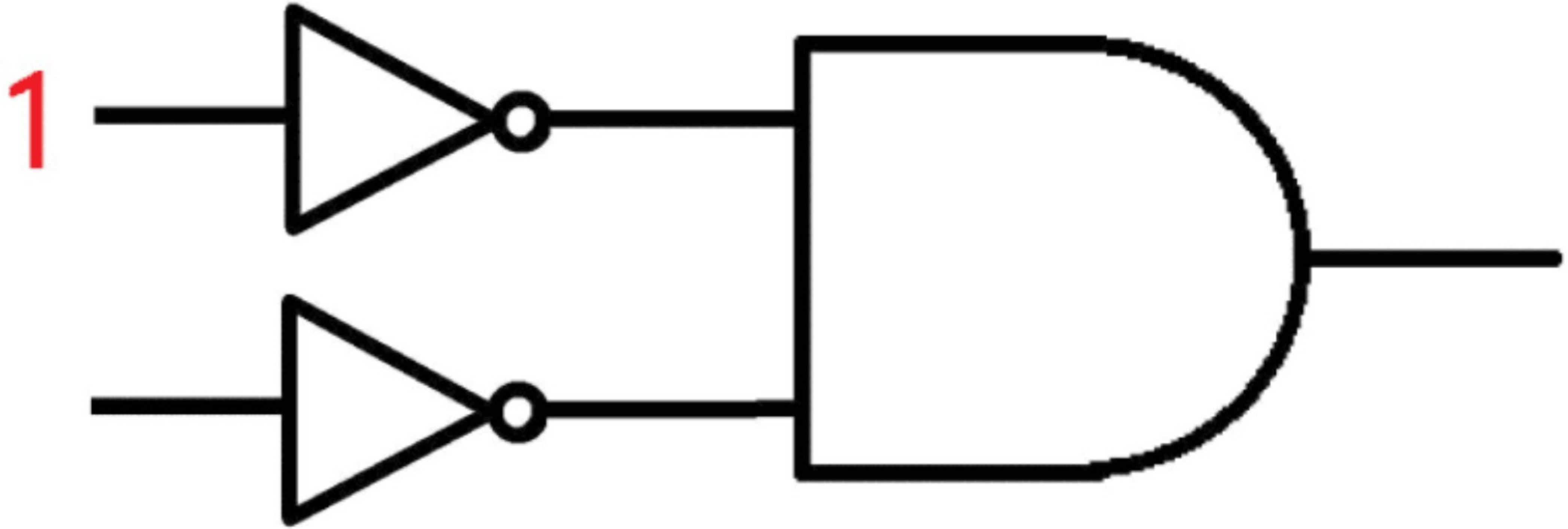
A	B	F
0	0	1
0	1	0
1	0	
1	1	

A	B	F
0	0	1
0	1	0
1	0	0
1	1	









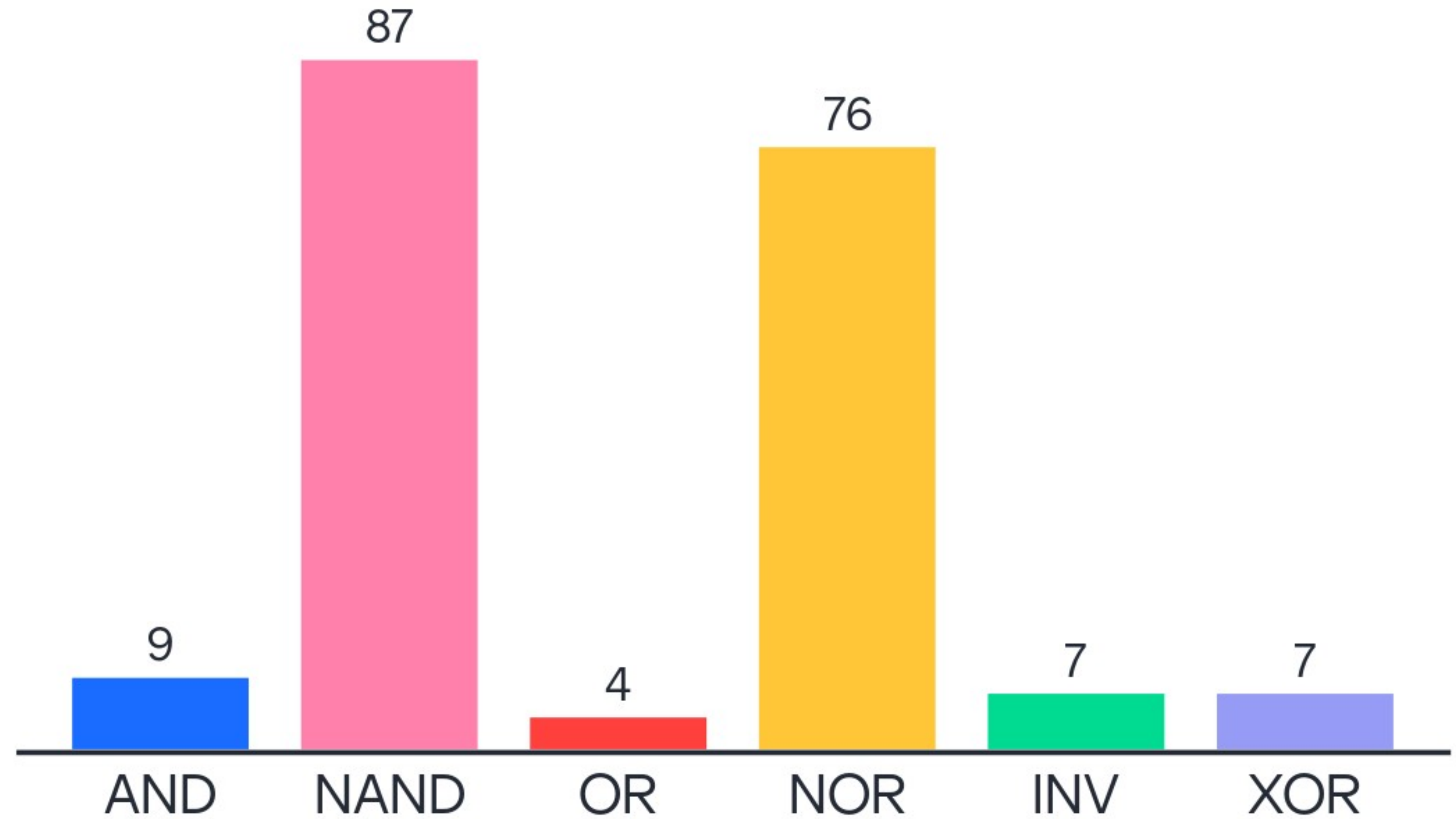
Interactive process



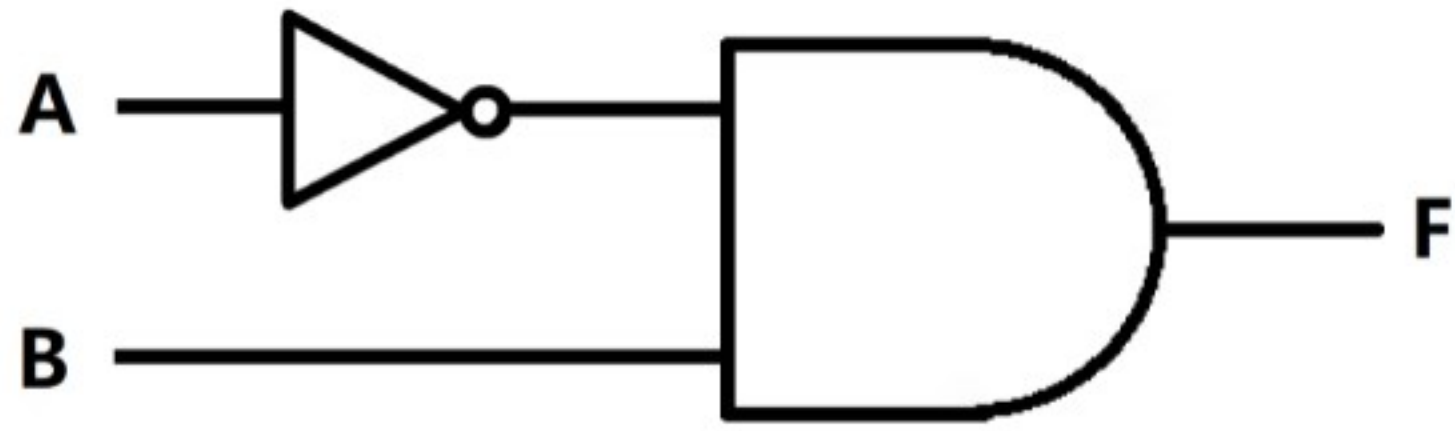
A	B	F
0	0	1
0	1	0
1	0	0
1	1	0

Hvilken port har denne sannhetsverditabellen?

A	B	F
0	0	1
0	1	0
1	0	0
1	1	0



Hva er funksjonen til denne kretsen?



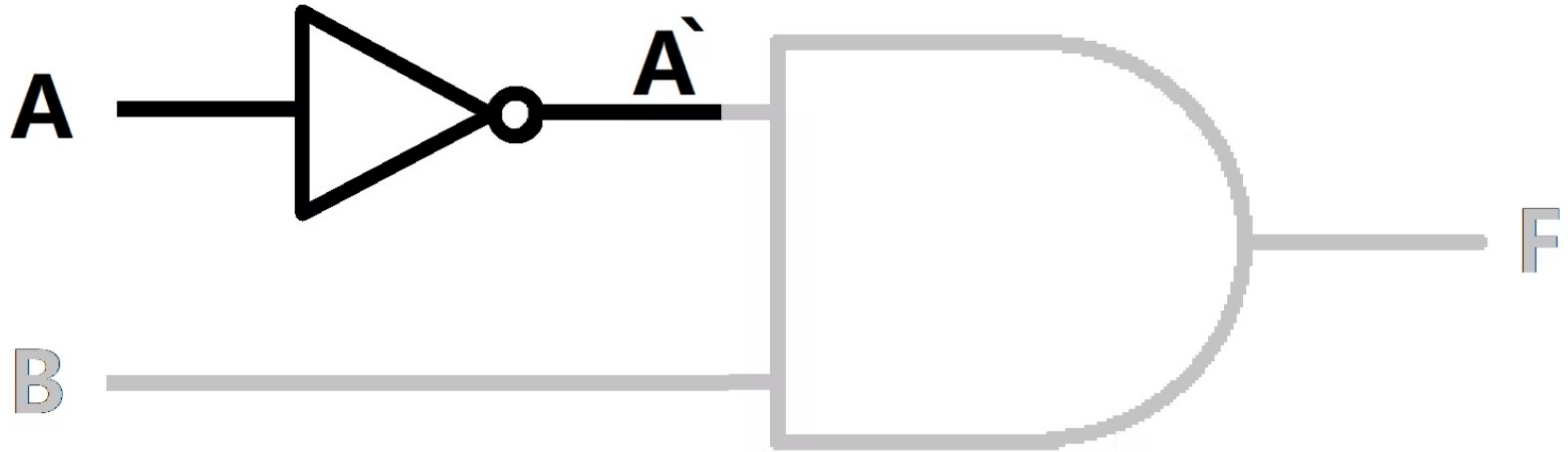
1%
 $F = AB'$

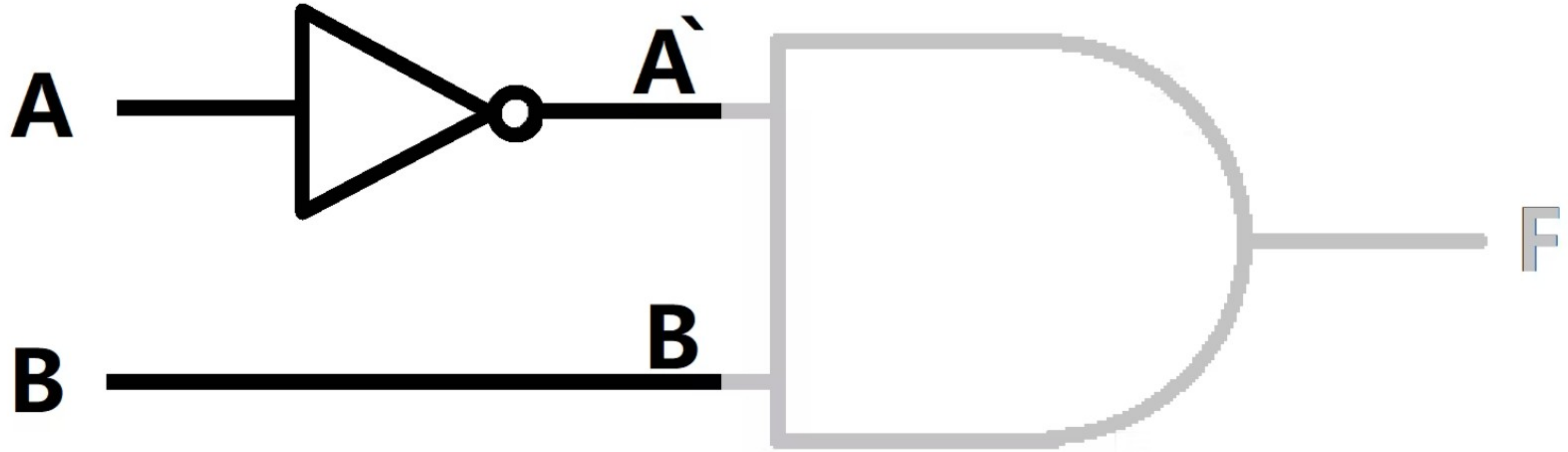
5%
 $F = A' + B$

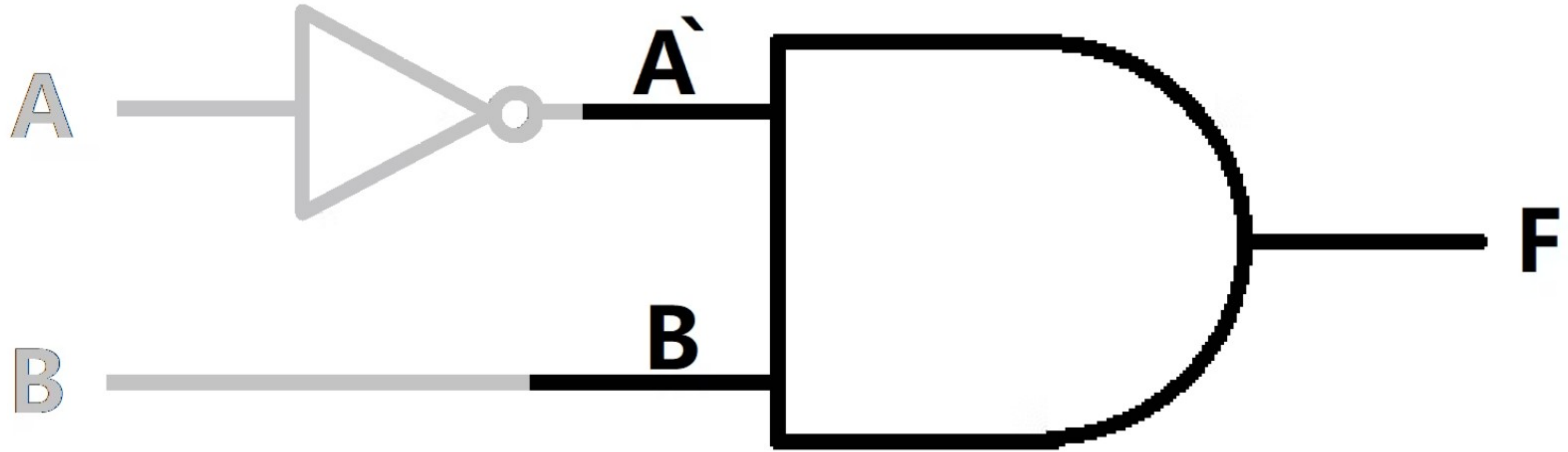
1%
 $F = (AB)'$

92%
 $F = A'B$

0%
 $F = A + B'$



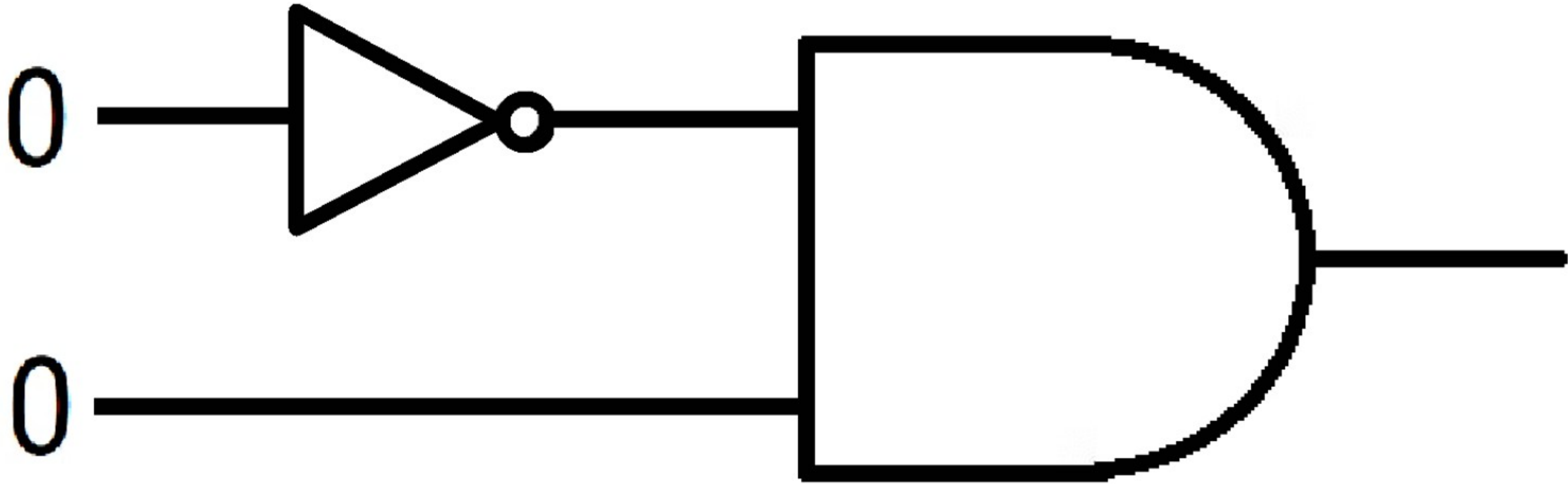


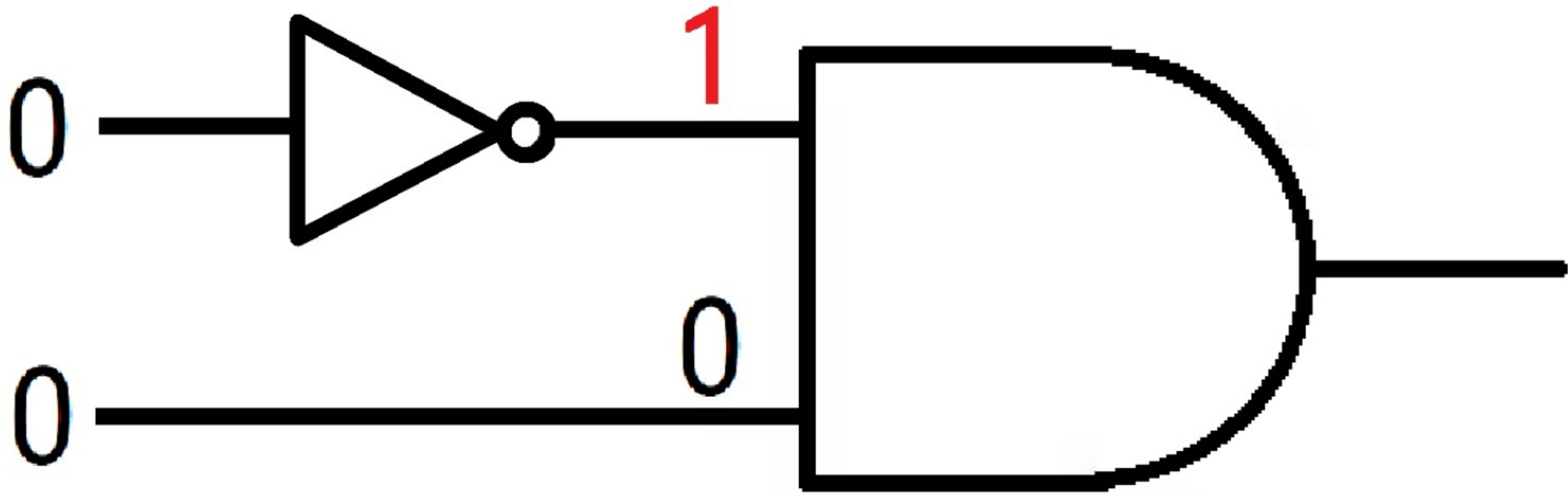


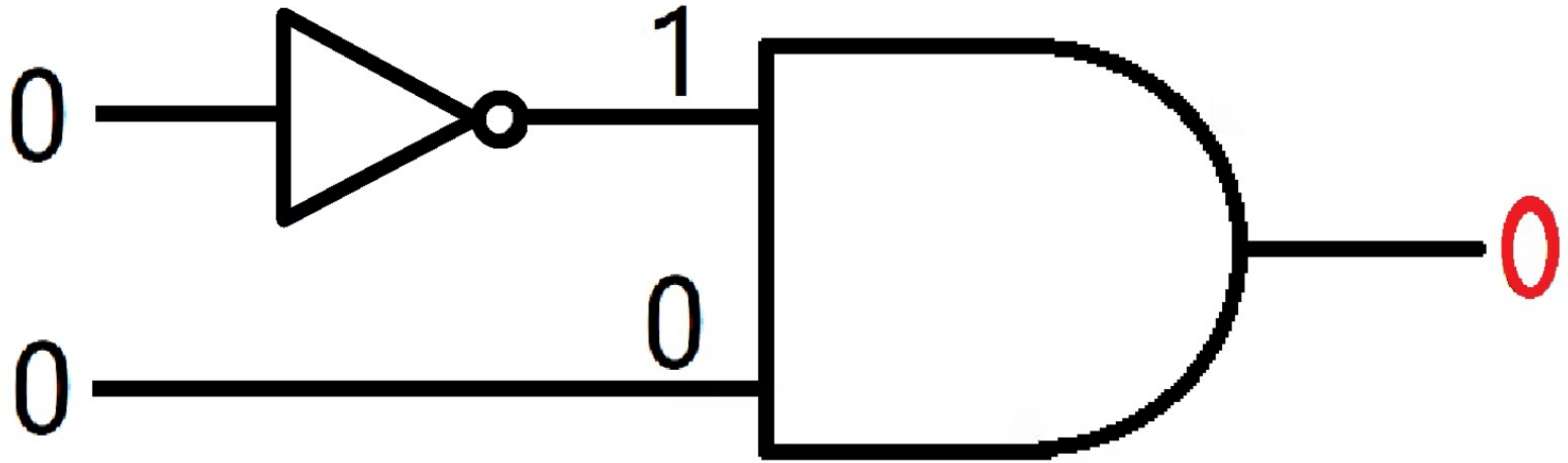
$$F = A'B$$

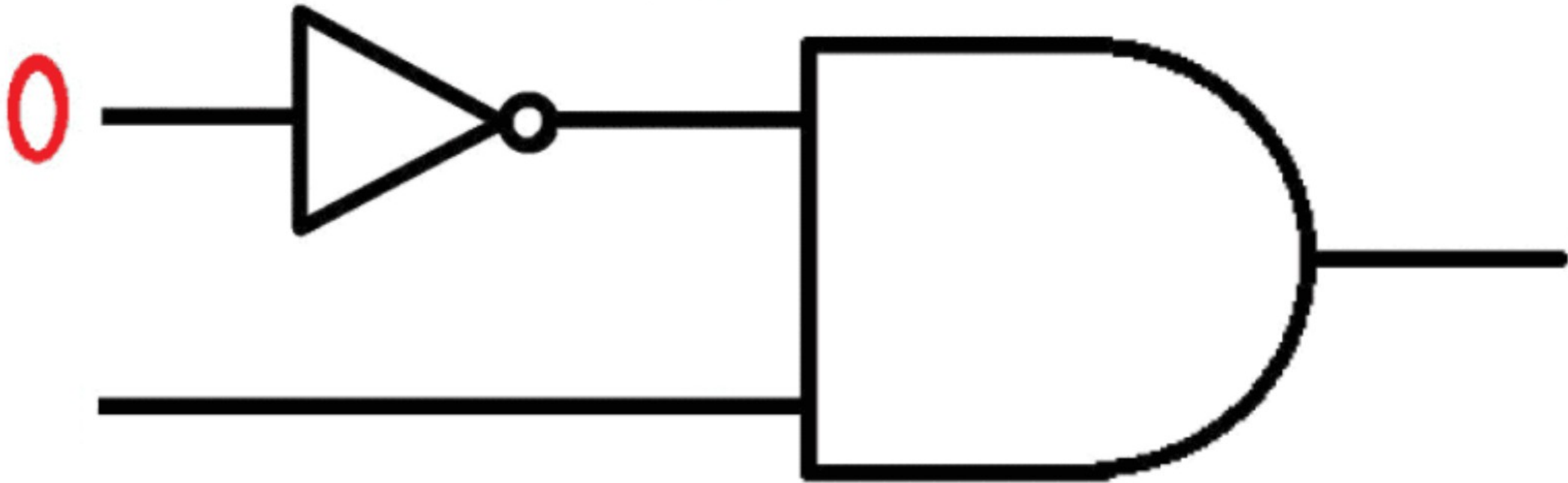
A	B	F
0	0	
0	1	
1	0	
1	1	

Sannhetsverditabellen for F?





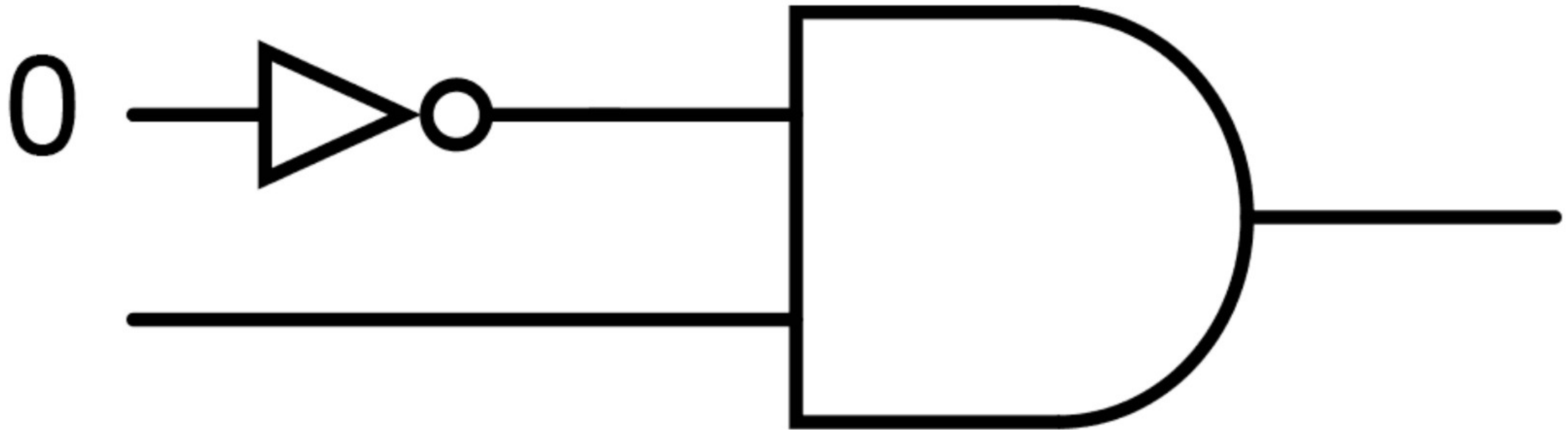




Interaktivt

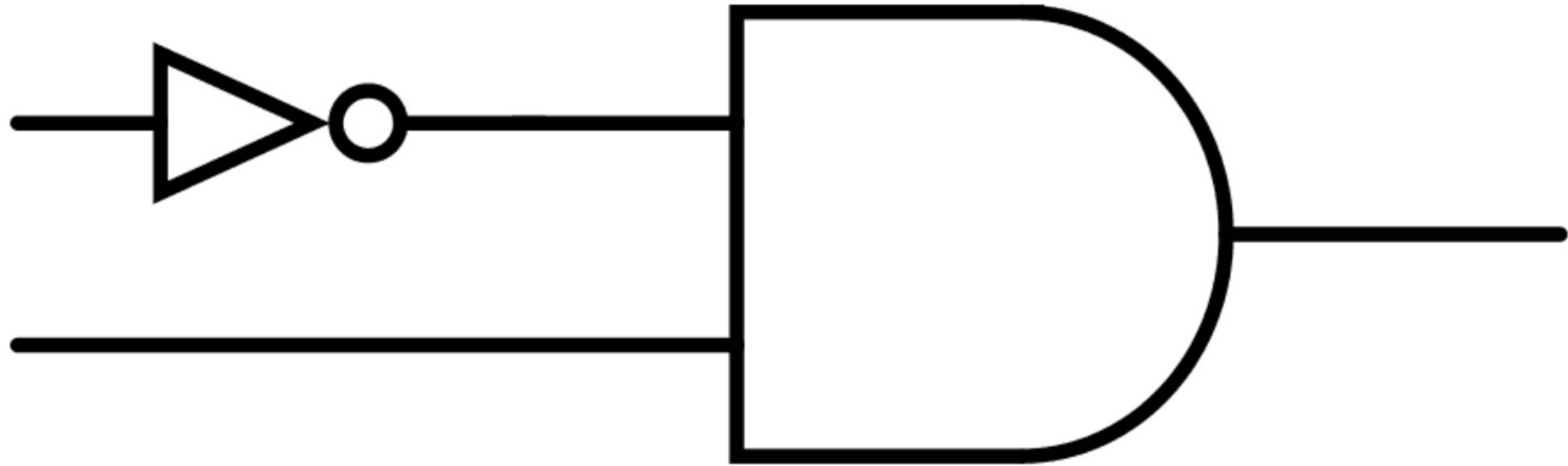


A	B	F
0	0	0
0	1	
1	0	
1	1	



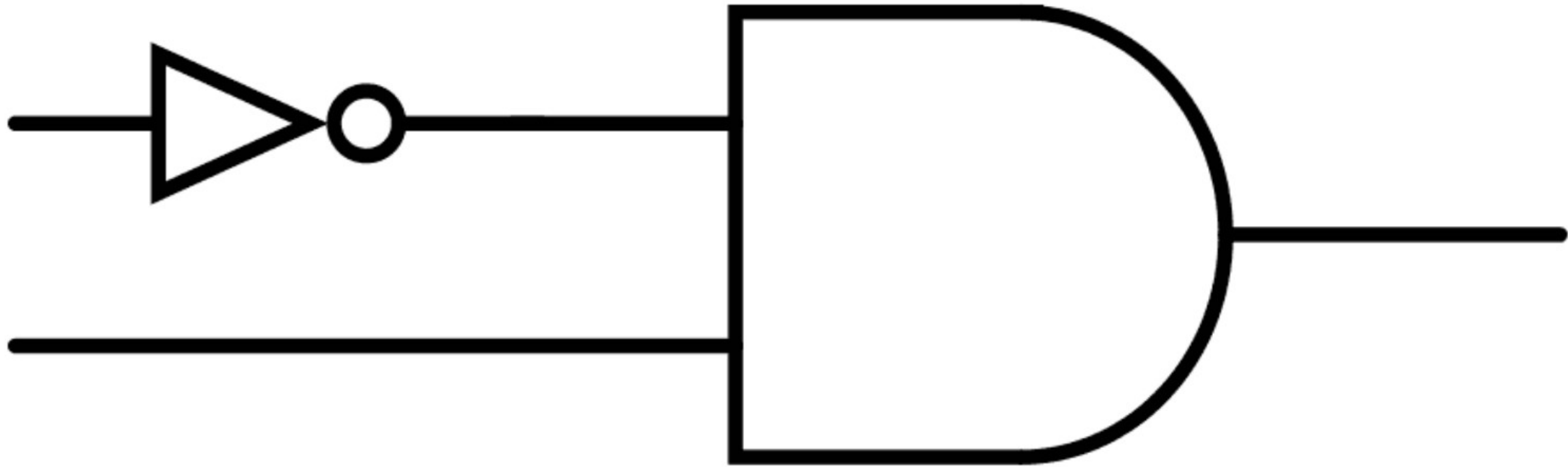
Interaktivt

A	B	F
0	0	0
0	1	1
1	0	
1	1	



Interaktivt

A	B	F
0	0	0
0	1	1
1	0	0
1	1	1



Interaktiv

A	B	F
0	0	0
0	1	1
1	0	0
1	1	0

Spørsmål

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