

PORTAS UNIVERSAIS

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POR QUE UNIVERSAIS?

São portas que sozinhas podem implementar qualquer função lógica

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- Ou seja, podem executar as operações básica E, OU e NÃO (AND, OR e NOT)

AND

X	Y	X.Y
V	V	V
V	F	F
F	V	F
F	F	F

OR

X	Y	X+Y
V	V	V
V	F	V
F	V	V
F	F	F

NOT

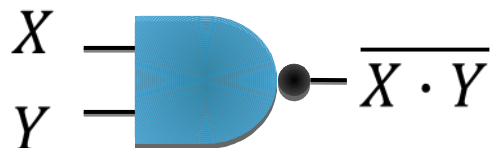
X	X'
V	F
F	V

QUAIS SÃO?

Tanto a porta **NAND** como a porta **NOR** são universais

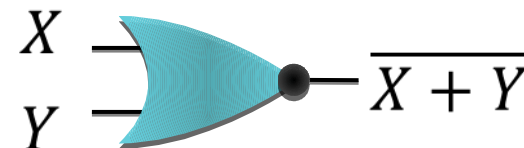
NAND

X	Y	X.Y
V	V	F
V	F	V
F	V	V
F	F	V



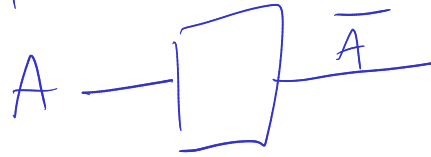
NOR

X	Y	X+Y
V	V	F
V	F	F
F	V	F
F	F	V



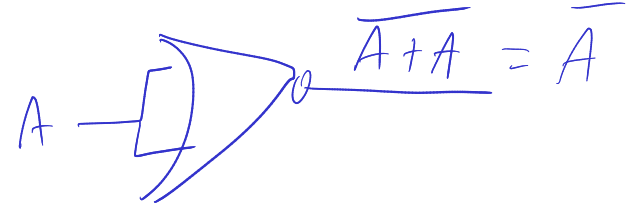
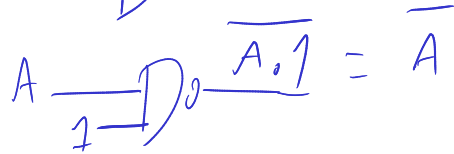
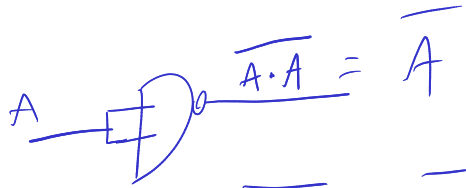
NOT

$$A \cdot A = A$$



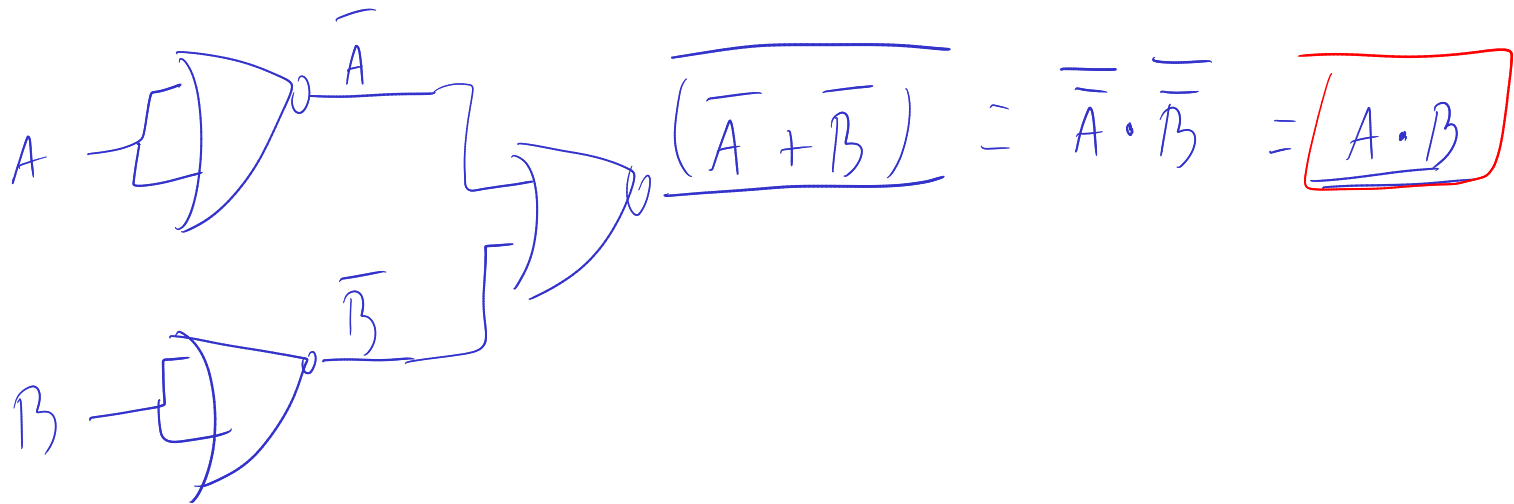
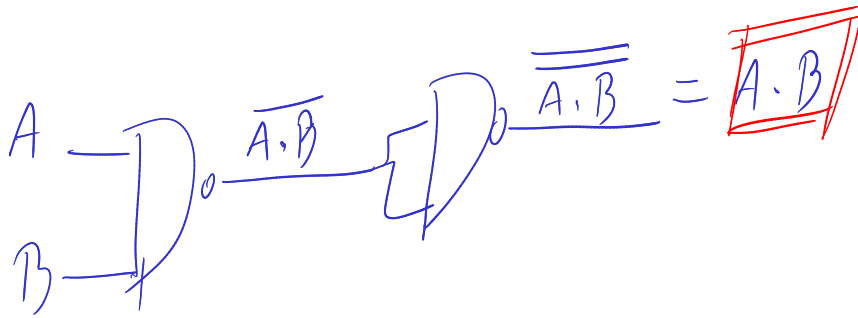
$$A \cdot 1 = A$$

$$A + A = A$$

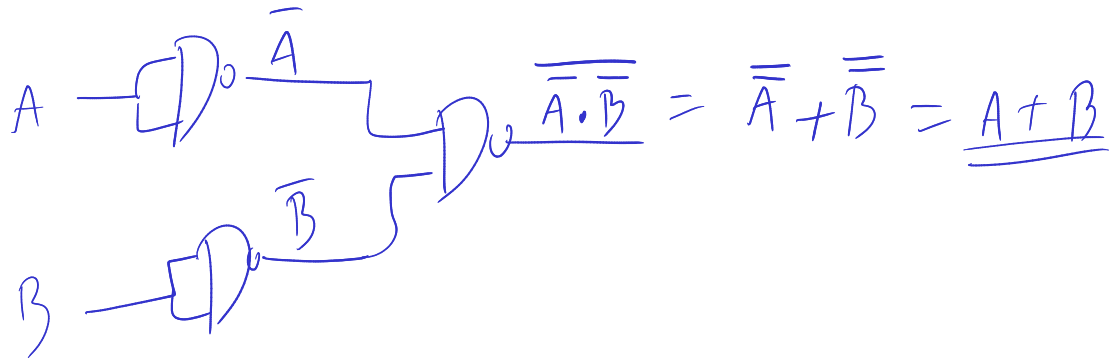
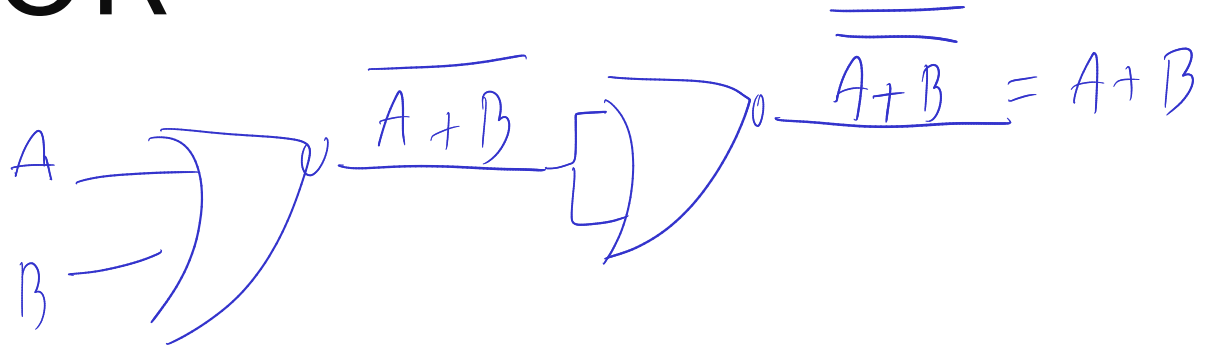


AND

$$\overline{\overline{A \cdot B}} = A \cdot B$$

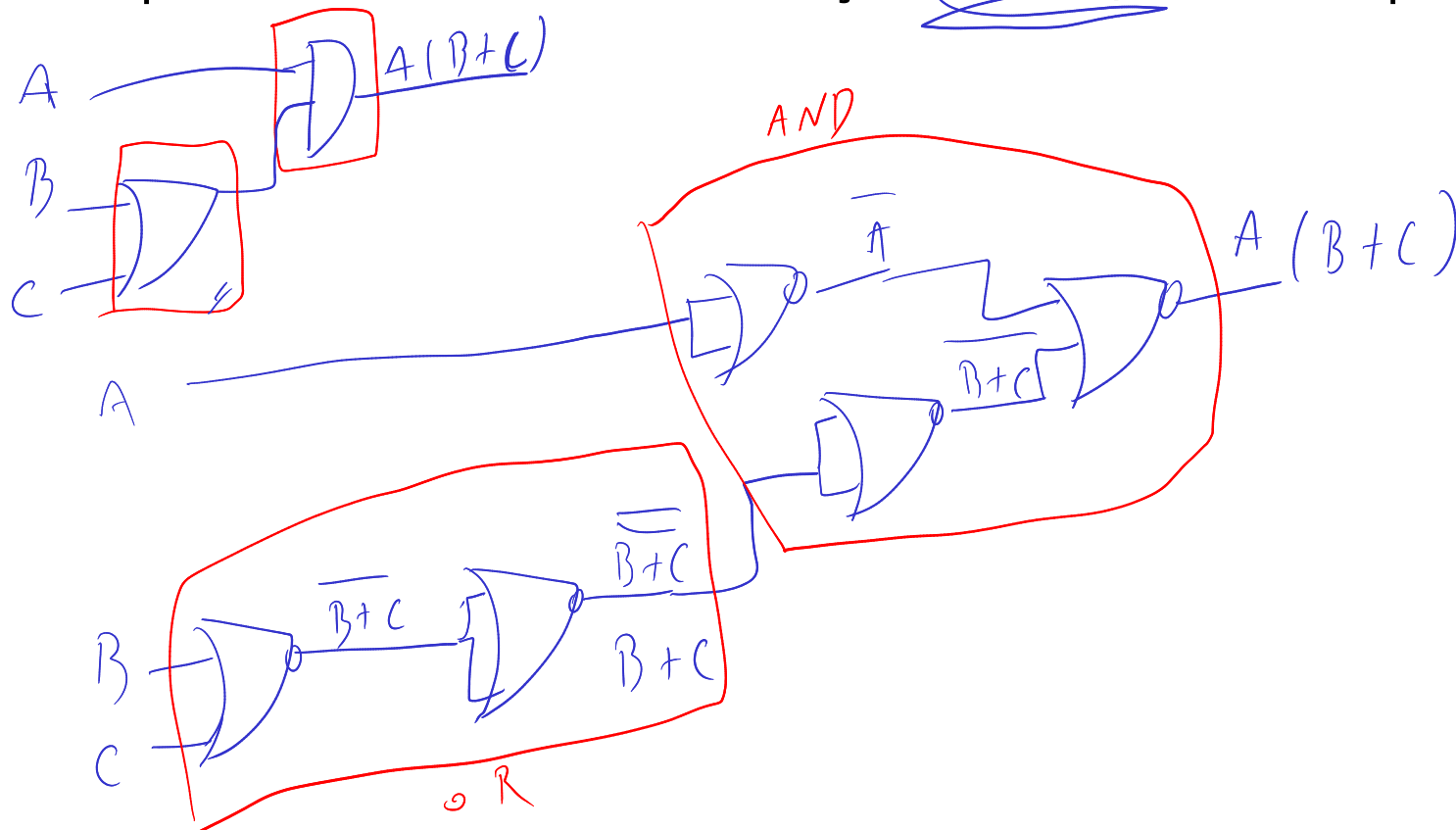


OR



EXERCÍCIO

Implemente o circuito da função $A(B+C)$ usando apenas NOR



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Implemente o circuito da função $A(B+C)$ usando apenas NOR

