HOMEWORK

EXERCICE 1

Determine the values of A, B, C, and D that makes this expression **false**:

```
!A and B and  !C and D
```

A. A = 1, B = 0, C = 0, D = 0
B. A = 1, B = 0, C = 1, D = 0
C. A = 0, B = 1, C = 0, D = 0
D. A = 1, B = 0, C = 1, D = 1

EXERCICE 2

Determine the values of A, B, C, and D that makes this expression **true**:

```
!A . B . !C . D
```

A. A = 0, B = 1, C = 0, D = 1
B. A = 0, B = 0, C = 0, D = 1
C. A = 1, B = 1, C = 1, D = 1
D. A = 0, B = 0, C = 1, D = 0

EXERCICE 3

True or false?

```
AC + ABC = AC
```

To solve this problem:

1- Try using a TRUTH table

A	B	C	AC + ABC	AC
False	True	True	False	True
False	False	False	False	False
True	True	True	True	True
True	False	False	False	False

2- Using the 7 rules of simplification

AC + ABC = AC + ACB
= AC or (AC and B)
= AC and (true or B)

= AC and true
= AC

EXERCICE 5

True or false?

A + AB = A

To solve this problem:

1- Try using a TRUTH table

A	B	A + AB
True	True	True
False	False	False
True	False	True
False	True	False

2- Try using the 7 rules of simplification

A + AB = A or (A and B)
= A and (true or B)
= A and true
= A

EXERCICE 6

True or false?

A + !AB = A + B

To solve this problem:

1- Try using a TRUTH table

A	B	A + !AB	A + B
True	True	True	True
False	False	True	False
True	False	True	True
False	True	False	True

2- Try using the 7 rules of simplification

A + !AB = A or (!A and B)
= A and (!true or B)
= A and B

In the following exercises: you need to use the table of truth to simplify the expression as much as possible

EX-14

```
A == True and (B == False or A == False) and B == True
```

a	b	a == True and (b == False or a == False) and b == True
True	True	False
True	False	False
False	True	False
False	False	False

The expression is equivalent to: False

EX-15

```
(A == True and B == False) or (A == False and B == True)
```

a	b	(a == True and b == False) or (a == False and b == True)
True	True	False
True	False	True
False	True	True
False	False	False

The expression is equivalent to:

False

True

True

False

EX-16

```
(B or !B) and A
```

a	b	(B or ! B) and A
True	True	True
True	False	False
False	True	False
False	False	False

The expression is equivalent to:

True

False

False

False