Assignment #1 - Logic
Discrete Mathematics

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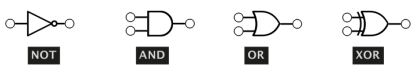
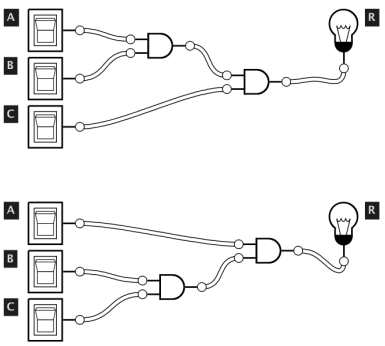
1 Equivalence laws

In digital electronics the following gates implements logical statements:



Write a diagram for each of the laws of equivalence, ie.:



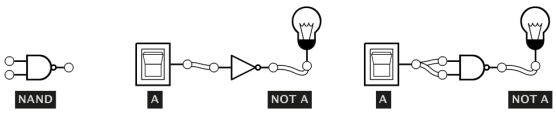
$$(a \wedge b) \wedge c \equiv a \wedge (b \wedge c)$$

2 Nand

The simplest logic circuit to create is a nand gate. It has the following trush table and is equivalent to $\neg(a \wedge b)$:

a	b	$\neg(a \wedge b)$
f	f	t
f	t	t
t	f	t
t	t	f

Nand has the special property, that any other binar operator can be build from NAND, here the NAND gate is shown and the implementation of `not`:



Build the operators `and`, `or`, `xor`, and `implies` with NAND gates alone.

Hand in

In groups on Peergrade by Wednesday September 4$^{\text{th}}$ at 08:30

`http://logic.ly`