

Can you prove DeMorgan's Theorem using a truth table?

$$\neg(A+B) = \neg A \cdot \neg B$$

A	B	$\neg A$	$\neg B$	$A + B$	$\neg(A+B)$	$\neg A \cdot \neg B$
0	0	1	1	0	1	1
0	1	1	0	1	0	0
1	0	0	1	1	0	0
1	1	0	0	1	0	0

$$\neg(A \cdot B) = \neg A + \neg B$$

A	B	$\neg A$	$\neg B$	$A \cdot B$	$\neg(A \cdot B)$	$\neg A + \neg B$
0	0	1	1	0	1	1
0	1	1	0	0	1	1
1	0	0	1	0	1	1
1	1	0	0	1	0	0

Simplification Theorem Truth Tables

$$A + A \cdot B = A$$

$$A \text{ or } (A \text{ and } B) = A$$

A	B	$A \cdot B$	$A + A \cdot B$
0	0	0	0
0	1	0	0
1	0	0	0
1	1	1	1

$$A + \neg(A \cdot B) = A + B$$

$$A \text{ or } (\text{NOT } A \text{ and } B) = A \text{ or } B$$

A	B	$\neg A$	$\neg(A \cdot B)$	$A + \neg(A \cdot B)$	$A + B$
0	0	1	0	0	0
0	1	1	1	1	1
1	0	0	0	1	1
1	1	0	0	1	1