ON STEADY

The Bright Side of Mathematics



Start Learning Logic - Part 3

Logical operations:

Conditional: For two logical statements A, B,

 $A \rightarrow B$ denotes the conditional.

Truth table				
	A	3	$A \to 3$	
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We can write:

$$A \wedge B \Rightarrow B$$

Biconditional: For two logical statements A, B,

 $A \leftrightarrow B$ denotes the biconditional.

 \iff means \iff gives tautology

Truth table				
	Α	3	$A \leftrightarrow B$	
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	T	Ŧ	Ŧ	
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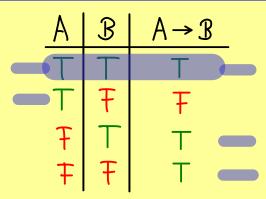
Example: (a) $A \Leftrightarrow B \iff (A \Rightarrow B) \land (B \Rightarrow A)$

 $A \rightarrow B \iff \neg \beta \rightarrow \neg A$ (contraposition)

If there is fog, then If we don't have poor visibility, we have poor visibility there is no fog.

Deduction rules: (how to get new true propositions from other true propositions)

Modus ponens: If $A \rightarrow B$ true and A true, then: B true



Chain syllogism: If $A \rightarrow B$ true and $B \rightarrow C$ true, then: $A \rightarrow C$ true

Reductio ad absurdum: If $A \rightarrow B$ true and $A \rightarrow B$ true, then: $\neg A$ true