

$P \rightarrow Q$

how can this be false?
only if P true, Q false.

negation:

$\sim(P \rightarrow Q) = P \wedge (\sim Q)$

P	Q	$\sim(P \rightarrow Q)$	$P \wedge (\sim Q)$
T	T	F	F
T	F	T	T
F	T	F	F
F	F	F	F

these are logically equivalent
"mean the same thing".

More negations

$\sim(P \wedge Q) = \sim P \vee \sim Q$
 $\sim(P \vee Q) = \sim P \wedge \sim Q$

} De Morgan's Laws

