Name:________________________

Lecture 3, class activity

We have talked about proof by exhaustion, or proof by cases, before.
The logical justification for this rule is

$$(P_1 \vee P_2 \vee \cdots \vee P_n) \implies Q \text{ is equiv. to } (P_1 \implies Q) \wedge (P_2 \implies Q) \wedge \cdots \wedge (P_n \implies Q).$$

When $n = 2$, this becomes

$$(P_1 \vee P_2) \implies Q \text{ is equiv. to } (P_1 \implies Q) \wedge (P_2 \implies Q). \tag{1}$$

Let us prove this last one with a truth table!

P_1	P_2	Q	$P_1 \implies Q$	$P_2 \implies Q$	$P_1 \vee P_2$	$(P_1 \vee P_2) \implies Q$
T	T	T				
T	T	F				
T	F	T				
T	F	F				
F	T	T				
F	T	F				
F	F	T				
F	F	F				

1. Verify that the last column is the AND of the first two columns that you've filled in.

2. Translate the meaning of (1) into words.