

Philosophy 201: Precept 5

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Translations:

1. The light will come on only if the power is not out. (l, p)
2. If it's a lion, it will either eat us or leave us alone. (l, e, a)
3. Europa is neither a moon of Mercury nor a moon of Saturn. (m, s)
4. If Europa is a moon of Saturn, then its not a moon of Jupiter. (s, j)
5. Either Europa is a moon of Jupiter or its a moon of Mercury. (m, j)

Truth Tables and Validity:

A. Is the argument that takes (5) as the conclusion and (3), (4) as premises valid? Justify.

B. Determine whether or not the following is valid and justify:

1. $(p \rightarrow q), (\sim p \rightarrow q) \vdash q$
2. $(q \rightarrow q) \wedge \sim (q \rightarrow q) \vdash p \vee q$
3. $\vdash (p \rightarrow q) \vee \sim \sim (p \wedge \sim q)$
4. $p \vee q \vdash p$
5. $p \vee \sim p \vdash p \rightarrow (q \rightarrow p)$

C. Define *valid argument* (not in terms of truth tables).

D. Define *valid argument* in terms of truth tables. That is, complete the sentence: an argument with premises ϕ_1, \dots, ϕ_n and conclusion ψ is valid if ...

Proofs:

1. $\sim p \vdash p \rightarrow q$
2. $\vdash p \vee \sim p$
3. $p \wedge \sim q \vdash \sim (p \rightarrow q)$
4. $\sim (p \rightarrow q) \vdash p \wedge \sim q$

True/False:

1. If ϕ is a contingency and ψ is a contingency, then $\phi \vee \psi$ is a contingency.
2. If ϕ is a contradiction, then any sequent with ϕ as the conclusion will be invalid.
3. Is there a correctly written proof with the following lines. Justify.

1	(1)	$r \rightarrow \sim r$	A
...			
?*	(2)	$r \rightarrow \sim (p \rightarrow p)$?

4. Give a sentence that has the truth table F T T T using only \sim and \rightarrow .