

Practice Quiz

Part 1:

Prove that the following two sentences are sentences of propositional logic.

1. $((\neg P \supset Q) \supset R)$

2. $\neg\neg(A \vee B)$

Part 2:

For the following translation task, use the following translation key.

I = Antonio is Italian.

P = Antonio loves pasta.

L = Jingyi loves linguistics.

Translate the following three sentences into propositional logic.

3. Antonio loves pasta, if Antonio is Italian

4. Antonio loves pasta only if Antonio is Italian.

5. Either Jingyi doesn't love linguistics or Antonio loves pasta.

Part 3:

Using truth tables, identify whether the following arguments are valid.

Be sure to fill out the truth table for each sentence in the argument.

6. $(A \vee B) \supset B$

A

$\therefore B$

A	B	$(A \vee B) \supset B$	A	$\therefore B$
T	T			
T	F			
F	T			
F	F			

☐ Valid ☐ Invalid

7. $(A \vee B) \equiv B$

$\neg B$

$\therefore A \wedge \neg B$

A	B	$(A \vee B) \equiv B$	$\neg B$	$\therefore A \wedge \neg B$
T	T			
T	F			
F	T			
F	F			

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Part 4

For the following questions, show that the conclusion is a logical consequence of the given premises by constructing a derivation of the conclusion from the premises. If there are no premises, derive the conclusion from the no premises.

8. $(X \vee Y) \supset Z$
X
Derive: Z

9. Derive: $\neg(A \wedge \neg A)$

Challenge question:

10. Using the following premises:

a. $(A \vee B) \supset \neg C$

b. $D \supset (\neg F \wedge \neg G)$

Derive: $(A \vee D) \supset \neg(C \wedge F)$