PHIL 220: Introduction to Logic

Week 8 Discussion (10/17/2025)

Reminders:

Assignment 4 is due by midnight next Monday (10/20/2025).

Today's Agenda:

(1). Review natural deduction rules;

(2). Review some tough proofs;

(3). Practice a little mock test.

Checklist for Natural Deduction Rules

What you need to know	No idea	Meh	Got it!
Repetition (Rep)			
Conjunction Elimination (E∧)			
Conjunction Introduction (I∧)			
Conditional Elimination (E→)			
Conditional Introduction (I→)			
Disjunction Introduction (I∨)			
Disjunction Elimination (E∨)			
Negation Elimination (E∼)			
Negation Introduction (I∼)			
Ex Falso Sequitur Quodlibet (EFSQ)			
Double Negation (∼∼)			

Some questions to notice:

- Which rules need to start a subproof?

- What is the difference between Negation Introduction and EFSQ?

Some useful patterns in proofs:

l	$\phi \rightarrow \psi$
m	$\neg\psi$
	$\vdots$
n	$\neg\phi$

l	$\phi \vee \psi$
m	$\neg\phi$
	$\vdots$
n	ψ

l	$\neg(\phi \vee \psi)$
	$\vdots$
n	$\neg\phi \wedge \neg\psi$

Tough proofs from Assignment 4:

16. $\neg(\neg p \vee (q \rightarrow r)) \vdash (p \wedge \neg(q \rightarrow r))$

20. $p \rightarrow (q \vee r), \neg q, \neg r \vdash \neg p$

23. $((p \wedge q) \rightarrow r), (\neg p \vee (q \wedge \neg r)) \vdash \neg p$

A mock test

(A). *You will get an A for this course if you pay attention in class. For you won't get an A for this course unless you pay attention in class and you come to the discussion sections. But obviously, you come to discussion sections.*

Premise-conclusion form:

1.

2.

3.

Translation key:

p:

q:

r:

The argument translated:

1.

2.

3.

Check its Validity:

(B). *If it will rain tomorrow, I will neither go to the park nor study at the library. But if I won't study at the library, I won't go to the park either. However. I will go to the park. Therefore, it will not rain tomorrow.*

Premise-conclusion form:

1.

2.

3.

4.

Translation key:

p:

q:

r:

The argument translated:

1.

2.

3.

4.

Check its Validity: