

PHIL 4310: Advanced Logic  
Spring 2026  
Homework 4

Finish reading Chapter 3 of *Logic for Philosophy*. This homework is due Wed, March 25th (after we return from spring break).

Homework questions:

Do exercise 3.2b and 3.2c (page 122). Use a full truth table and explain how to read it to answer the questions.

Do exercises 3.3 and 3.4 (page 122). You should state the answers and some argument/explanation of your answer. A full table is sufficient but not required.

Do exercises 3.5 and 3.6 (page 122). As before, explain your answer. A formal proof is not required.

Do exercises 3.8 and 3.11 (page 122).

Do exercise 3.12 and 3.13 (page 130). For 3.13, Sider proved the fairly trivial claim that if  $\models_{PL} \varphi$  then  $\models_{SV} \varphi$ . Now prove the converse - that is, if  $\models_{SV} \varphi$  then  $\models_{PL} \varphi$ .

Do exercise 3.16 (a-e) (page 136). Once you prove any sequent is derivable in any problem, you may use it in another problem. For example, if on line 10 of 3.16a you have  $P \Rightarrow \sim\sim P$ , then in another problem you may simply write  $P \Rightarrow \sim\sim P$  and cite "3.16a line 10" as the justification. NOTE: This is especially useful when you are allowed to any substitution instance of another derivable sequent though that would be necessary here.

Do exercise 3.17 (page 136) [Note that some subscripts are missing in the statement of the problem.]