

Week 5

Exercises on Natural Deduction (1)

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02 April 2020

1. Prove the following derivations:

a) $\varphi \vdash \varphi \wedge \varphi$;

b) $\varphi, \varphi \rightarrow \psi \vdash \varphi \wedge \psi$.

2. Prove the following derivations (*Hint*: Most of the derivation is already done):

a) $\vdash \varphi \rightarrow (\varphi \wedge \psi)$;

b) $\vdash (\varphi \rightarrow \psi) \rightarrow (\neg(\varphi \wedge \neg\psi))$.