

# Lógica Computacional

LEI, 2014/2015

DI-UBI

Aulas Práticas 14

Dedução Natural em Lógica Proposicional

Provam-se as seguintes afirmações.

1.  $\{\varphi, \psi, \delta\} \vdash \varphi \wedge (\psi \wedge \delta)$
2.  $\{\varphi \wedge \psi, \delta\} \vdash \varphi \wedge \delta$
3.  $\{\varphi, \varphi \rightarrow \psi, \psi \rightarrow (\delta \wedge \gamma)\} \vdash \delta$
4.  $\vdash (\varphi \wedge \psi) \rightarrow \varphi$
5.  $\vdash \varphi \rightarrow (\psi \rightarrow \varphi)$
6.  $\{\varphi \rightarrow \psi\} \vdash \varphi \rightarrow (\psi \vee \delta)$
7.  $\{\varphi \rightarrow (\psi \wedge \delta)\} \vdash (\varphi \rightarrow \psi) \wedge (\varphi \rightarrow \delta)$
8.  $\{(\varphi \rightarrow \psi) \wedge (\psi \rightarrow \delta)\} \vdash \varphi \rightarrow \delta$
9.  $\{\varphi \wedge \neg\varphi\} \vdash \perp$
10.  $\{\neg\neg\varphi\} \vdash \varphi$
11.  $\{\varphi\} \vdash \neg\neg\varphi$
12.  $\{\varphi \vee \psi, \varphi \rightarrow \delta, \psi \rightarrow \delta\} \vdash \delta$
13.  $\{(\varphi \wedge \psi) \vee (\varphi \wedge \delta)\} \vdash \varphi$
14.  $\{(\varphi \vee \psi) \wedge (\neg\varphi \vee \delta)\} \vdash \psi \vee \delta$