

Lógica Computacional

LEI, 2010/2011

FCT UNL

Aula Prática 19

Leis da Lógica de Primeira Ordem

Prove as seguintes afirmações.

1. $\{\exists x (\varphi \wedge \psi)\} \models \exists x \varphi \wedge \exists x \psi$
2. $\{\forall x \varphi \wedge \forall x \psi\} \models \forall x (\varphi \wedge \psi)$
3. $\{\exists x \varphi \vee \exists x \psi\} \models \exists x (\varphi \vee \psi)$
4. $\{\exists x \neg \varphi\} \models \neg \forall x \varphi$
5. $\{\forall x \neg \varphi\} \models \neg \exists x \varphi$
6. $\forall x \varphi \equiv \neg \exists x \neg \varphi$
7. $\forall x \varphi \vee \psi \equiv \forall x (\varphi \vee \psi)$, se $x \notin \text{VL}(\psi)$
8. $\exists x \varphi \vee \psi \equiv \exists x (\varphi \vee \psi)$, se $x \notin \text{VL}(\psi)$
9. $\exists x (\psi \rightarrow \varphi) \equiv \psi \rightarrow \exists x \varphi$, se $x \notin \text{VL}(\psi)$
10. $\exists x (\varphi \rightarrow \psi) \equiv \forall x \varphi \rightarrow \psi$, se $x \notin \text{VL}(\psi)$