



Nonmonotonic Reasoning

Winter Semester 2017/18

Exercise Sheet 12 – Belief Revision

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Exercise 12.1 Prove the following claim: if \leq is an epistemic entrenchment, then for any sentence φ , $cut_{\leq}(\varphi)$ is a theory. (Theorem 7.9)

Exercise 12.2 Prove or refute the following claim: if $\varphi < \psi$ then $\psi \in T_{\varphi}^{-}$.

Exercise 12.3 Assume $T = Th(\{\varphi, \psi\})$ and the epistemic entrenchment ordering related to T is given by the following ordering of dual atoms:

$$\neg\varphi \vee \neg\psi \leq \neg\varphi \vee \psi \leq \varphi \vee \psi = \varphi \vee \psi$$

Determine whether the following properties hold:

- (a) $\psi < \varphi$
- (b) $\psi \in T_{\varphi}^{-}$
- (c) $\psi \in T_{\psi}^{-}$
- (d) $\varphi \vee \psi \in T_{\psi}^{-}$
- (e) $\neg\varphi \vee \psi \in T_{\psi}^{-}$