Computationele logica

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1 Exercise 1: Singapore problem

(a) one

(b) two

(c) three

(d) four

(e) five

2 Exercise 2

Prove formally that, for every sentence φ, the sentence

$$\neg K_a \varphi \Rightarrow K_a \neg K_a \varphi$$

(expressing "Negative Introspection of Knowledge") is *valid* on (the family of all) **epistemic** models.

3 Exercise 3

Using the semantics of knowledge K_a and common knowledge Ck, show that the following is NOT valid on *epistemic models with (only) 2 agents a and b:*

$$(K_a K_b \phi \wedge K_b K_a \psi) \Rightarrow Ck(\phi \wedge \psi)$$