

Problem Set 3
Caput Logic, Language and Information: Social Software
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1. Prove that the induction axiom

$$\phi \wedge [\gamma^*](\phi \rightarrow [\gamma]\phi) \rightarrow [\gamma^*]\phi$$

is **not** valid in game logic models.

2. Consider the proof of correctness of the Banach-Knaster cake cutting procedure found in Parikh's paper on game logic¹. As stated, the proof is not completely formal. What is missing to make the proof completely formal? Note that there is no correct answer to this question, I am looking for a short (1-2 paragraph) discussion of what is missing, or a discussion of why to proof is essentially correct as stated.
3. **Extra Credit** Apply a similar analysis to other cake cutting procedures found in the Brams and Taylor book.

¹There is a link to this paper on the website. You can also refer to *Game Logic — an Overview* by Pauly and Parikh found in the *Studia Logica* issue devoted to game logic