24.251 – Intro to the Philosophy of Language
Problem Set 4: Tarski on Truth

1. Which of the following is an appropriate instance of Tarski's schema (T):

   (a) 'grass is green' is true if and only if grass is green

   (b) grass is green is true if and only if grass is green

   (c) grass is green is true if and only if 'grass is green'

   (d) X is true if and only if p

2. Suppose one's object language $\mathfrak{L}$ consisted entirely of the two sentences 'snow is white' and 'grass is green', and suppose one gave the following definition of truth for $\mathfrak{L}$:

   > For any sentence s, s is true if and only if [it is either the case that ($s =$ 'snow is white' and snow is white) or it is the case that ($s =$ 'grass is green' and grass is green)]

   Which of the following would be true, according to Tarski:

   (a) One's definition of truth is materially adequate

   (b) One's definition makes no appeal to undefined semantic terms (cf. the first paragraph of p. 343).

   (c) Both

   (d) Neither

3. Let $\mathfrak{L}$ be defined as above. Why, according to Tarski, shouldn't one expect the antinomy of the Liar to be derivable in $\mathfrak{L}$.

   (a) Because the usual laws of logic don't apply.

   (b) Because $\mathfrak{L}$ isn't semantically closed.

   (c) One *can* derive the antinomy of the Liar in $\mathfrak{L}$.

   (d) None of the above.

4. Consider a language, $\mathfrak{L}'$, built up from the predicate '...is true' and the names on the following list:

   - c_0 (which refers to the English sentence 'snow is white')
   - c_1 (which refers to the $\mathfrak{L}'$ sentence 'c_0 is true')

- c_2 (which refers to the $\mathcal{L}'$ sentence 'c_1 is true')
- c_3 (which refers to the $\mathcal{L}'$ sentence 'c_2 is true')

  $\vdots$
- c_{n+1} (which refers to the $\mathcal{L}'$ sentence 'c_n is true')

  $\vdots$

Sentences in $\mathcal{L}'$ are formed in the usual way:

- for any i, 'c_i is true' is a sentence
- if ϕ is a sentence, then 'it is not the case that ϕ' is a sentence
- if ϕ and ψ are sentences, then '(ϕ and ψ)' is a sentence
- nothing else is a sentence

Finally, we stipulate that the ordinary laws of logic are to hold for $\mathcal{L}'$.

Can the antinomy of the Liar be derived in $\mathcal{L}'$?

(a) Yes.

(b) No.

(*Hint:* This is a non-trivial question. In answering it, make sure you read the discussion on p. 340, and footnote 11.)