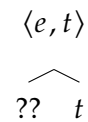
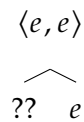
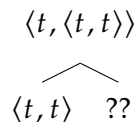


# Problem Set 4

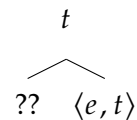
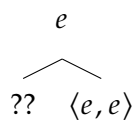
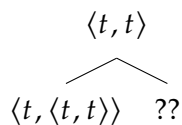
Due September 11 before class. Submit PDF on Luminus > Files > Student Submission > PS4.

## 1. Type practice:<sup>1</sup>

- (a) The following are trees with just types, which are interpretable using Function Application. Identify the missing type, labeled ??:



- (b) The following trees also give types that are interpretable using Function Application, except that in these trees, there are two possible solutions for each missing type, ??. For each tree, give both.



- (c) Complete the following:

- If there is a subtree of the form  $\begin{array}{c} \langle X, Y \rangle \\ \wedge \\ Y \quad ?? \end{array}$ , ?? must be \_\_\_\_\_.

- If there is a subtree of the form  $\begin{array}{c} Y \\ \wedge \\ \langle X, Y \rangle \quad ?? \end{array}$ , ?? must be \_\_\_\_\_ or \_\_\_\_\_.

## 2. Conjunction(s): For each example, draw its tree and compute its truth conditions.<sup>2</sup>

Note: Whenever you're asked to "compute the truth conditions for [complex structure with tree]," for each node in the tree, you need to give (a) its semantic type, (b) its denotation, and (c) the rule that you used (TN, NN, FA, etc.). Show your work.

- John sits and Mary stands.
- Kara sleeps and likes Tama.

<sup>1</sup>Based on an exercise in Yoad Winter's *Elements of Formal Semantics*, page 92.

<sup>2</sup>The syntax can be simple as in class with sentences as S nodes (no need for T/Infl) with subject and VP daughters. Don't worry too much about syntactic category labels.

For (1), use the following denotation for “and”:

$$(3) \quad \llbracket \text{and} \rrbracket = \lambda p_t . \lambda q_t . p \wedge q$$

For (2), you will have to define a different denotation for “and.”

Hint: Start by computing types using the triangle method.

If you would like a tool to draw your trees, [try phpsyntaxtree online](#). I recommend [this tutorial video on YouTube](#). Or if you’re using  $\text{\LaTeX}$ , try the `qtree` package which uses similar notation.