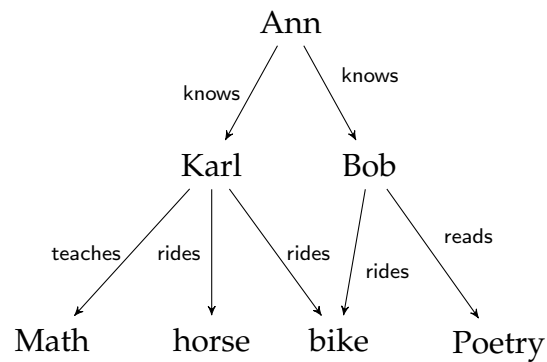


Tutorial Worksheet - Reasoning About Ontologies

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Recall the following ontology from the lecture:



1. Formalise this ontology as a Labelled Transition System (LTS).
2. Calculate the following sets:
 - (a) $\llbracket [\text{knows}] \langle \text{rides} \rangle \mathbf{tt} \rrbracket$
 - (b) $\llbracket [\text{knows}] \langle \text{teaches} \rangle \mathbf{tt} \rrbracket$
 - (c) $\llbracket \langle \text{knows} \rangle \langle \text{teaches} \rangle \mathbf{tt} \rrbracket$
 - (d) $\llbracket \langle \text{knows} \rangle [\text{teaches}] \mathbf{ff} \rrbracket$
 - (e) $\llbracket \langle \text{knows} \rangle [\text{ride}] \mathbf{ff} \rrbracket$
 - (f) $\llbracket [\text{knows}] \langle \text{rides} \rangle \mathbf{tt} \wedge \langle \text{knows} \rangle [\text{teaches}] \mathbf{ff} \rrbracket$
 - (g) $\llbracket [\text{knows}] (\langle \text{teaches} \rangle \mathbf{tt} \vee \langle \text{reads} \rangle \mathbf{tt}) \rrbracket$