CSE541 EXERCISE 9a
EXTRA CREDIT (15pts)

Problem 1 (5pts) Develop a 4 valued logic semantics $4B$ for $\mathcal{L}_{\{\Rightarrow,\cup,\cap,\neg\}}$ in such a way as to be able to prove that for any A of $\mathcal{L}$

$$\models A \;\; iff \;\; \models_{4B} A$$

You can prove it by following the proof Completeness Theorem for H_2 with respect to your 4-valued semantics $4B$.

Problem 2 (5pts) Develop a 8 valued logic semantics $8B$ for $\mathcal{L}_{\{\Rightarrow,\cup,\cap,\neg\}}$ in such a way as to be able to prove that for any A of $\mathcal{L}_{\{\Rightarrow,\neg\}}$

$$\models A \;\; iff \;\; \models_{8B} A$$

Problem 3 (5pts) Sketch a proof (motivation) of a fact that it is possible for any $n \in N$ to develop a 2^n valued semantics $2^n B$ such that the classical 2 valued semantics is its particular case and for any A of $\mathcal{L}$

$$\models A \;\; iff \;\; \models_{42^n B} A.$$