Problem Set 4 (24.241 Symbolic Logic)

Due Fri. **October 7th** by **5pm** Eastern

Please scan and upload to Canvas as a pdf; feel free to *also* turn in a paper copy to Philosophy Dept on 8th floor Stata Center, Dreyfoos-wing

Question 0: if you worked with up to two classmates, please list their names!

1. (i) Schematize the following argument into the language of sentential logic.
   (ii) Then, investigate its validity using the tree method (STD):

   "If the lawyer did it, then the doctor did not. Therefore, if the doctor did it, then the lawyer did not."

   - Symbolization Key: B = the lawyer did it; G = the doctor did it

2. (i) Schematize the following argument into the language of sentential logic.
   (ii) Then, investigate its validity using the tree method (STD):

   "If naïve realism is true, then naïve realism is false. Therefore, naïve realism is false."

3. Show via the tree method that the following is a tautology:

$$\big((P \vee Q) \,\&\, (P \vee R)\big) \supset \big(P \vee (Q \,\&\, R)\big)$$

4. Test the following argument for validity using the tree method (STD):

$$\begin{array}{r} A \,\&\, (B \vee C) \\ (\sim C \vee H) \,\&\, (H \supset \sim H) \\ \hline \therefore\ \sim B \end{array}$$

5. Test the following argument for validity using the tree method (STD):

$$\begin{array}{r} A \,\&\, (B \supset C) \\ \hline \therefore\ (A \,\&\, C) \vee (A \,\&\, \sim B) \end{array}$$

6. Use a tree to check whether the following formula is a tautology. State your conclusion. If the formula is *not* a tautology, then use the tree to find a truth value assignment that makes the formula false:

$$\big(P \supset (Q \supset R)\big) \supset \big((P \supset Q) \supset (P \supset R)\big)$$