Prerequisite Survey

Discrete Mathematics

Due: 20th of January, 2023

1. List the college-level math courses you have taken so far (including dual-enrollment and AP).

2. List the college-level philosophy courses you have taken so far (including dual-enrollment and AP).

3. List the college-level computer science courses you have taken so far (including dual-enrollment and AP).

4. What is your experience with programming? If you know any languages, please list them.

5. Answer the following questions to the best of your ability without guessing.
   If you understand the question, answer with "True" or "False" and argue in support of your answer.
   Otherwise, answer "???" to indicate you don't know.

   (a) $\big((p \to q) \wedge \neg q\big) \to \neg p$ is a tautology.

   (b) $A \cup (B \cap C) = (A \cup B) \cap C$.

   (c) $\varnothing \in \{x \mid x = x\}$.

   (d) $26 \in \Big\{x \in \mathbb{N}_+ \;\Big|\; \big(\forall y \in \mathbb{N}_+\big)\big(y \mid x \;\Rightarrow\; y \in \{1, x\}\big)\Big\}$.

   (e) There are as many integers as there are real numbers.

   (f) There are as many integers as there are natural numbers.

   (g) $3 \equiv 38 \pmod 7$

   (h) It is possible for a tree to contain a cycle.