CSE 390Z: Mathematics for Computation Workshop

QuickCheck: Predicate Logic (due Monday, January 27)

Please submit a response to the following questions on Gradescope. We do not grade on accuracy, so please submit your best attempt. You may either typeset your responses or hand-write them. Note that hand-written solutions must be legible to be graded.

We have created **this template** if you choose to typeset with Latex. **This guide** has specific information about scanning and uploading pdf files to Gradescope.

0. English to Logic Translation

Translate the following English statements to predicate logic:

Domain of Discourse: D:="Mammals"

Predicates:

$$
\begin{aligned}
\text{Walks}(x,\ y) \quad &:= \text{"}x \text{ walks } y\text{"} \\
\text{Dog}(x) \quad &:= \text{"}x \text{ is a dog"} \\
\text{Human}(x) \quad &:= \text{"}x \text{ is a human"} \\
\text{Friends}(x,\ y) \quad &:= \text{"}x \text{ and } y \text{ are friends"}
\end{aligned}
$$

(a) Humans are not friends with each other.
   Note that this means a human is also not friends with themselves

(b) All humans are friends with the dogs that they walk.

(c) Every human walks exactly one dog.

1. Video Solution

Watch **this video** on the solution **after** making an initial attempt. Then, answer the following questions.

(a) What is one thing you took away from the video solution?