Homework Problems 1: Due October 1

Answer these questions throughout the upcoming week and bring this completed sheet to turn in at the beginning of CS103A next week.

Lecture 01: Direct Proofs

i. What is a universal statement?

ii. How do you prove a universal statement with a direct proof?

iii. What is an existential statement?

iv. How do you prove an existential statement with a direct proof?

v. What is a proof by cases?

Lecture 02: Indirect Proofs

vi. What an an implication?

vii. What is an antecedent?

viii. What is a consequent?

ix. How do you prove an implication with a direct proof?

x. What is the contrapositive of the statement “if $P$ is true, then $Q$ is true?”

xi. What is the negation of the statement “if $P$ is true, then $Q$ is true?”

xii. What is the negation of the statement “for all $x$, $P(x)$ is true?”

xiii. What is the negation of the statement “there is an $x$ where $P(x)$ is true?”