Quiz 1

1. Give an inductive proof that the Fibonacci numbers F_n and F_{n+1} are relatively prime for all $n \geq 2$.
   The Fibonacci numbers are defined as follows,
   $F_0 = 0$, $F_1 = 1$, $F_n = F_{n-1} + F_{n-2}$ (for $n \geq 2$). **(5 M)**

2. Prove the equivalence using different inference rules **(5 M)**

   $\neg(p \leftrightarrow q) \equiv \neg p \leftrightarrow q$

   $p \leftrightarrow q \equiv p \leftrightarrow p \wedge q$. $\qquad \neg(p \vee q) \equiv (p \rightarrow p \wedge q) \wedge (p \wedge q) \rightarrow p$

3. Is this argument valid, "If discrete math is Good then $x = 4$, Discrete math is Good.
   Therefore $x = 4$ " **(5 M)**

4. Let A, B, and C be sets. Show that $(A - B) - C = (A - C) - (B - C)$. **(5 M)**

5. Use quantifiers to express the statement that "There does not exist a woman who has taken a flight on every airline in the world." Let $P(w, f)$ be "women (w) has taken flight (f) " and $Q(f, a)$ be "f is a flight on airline a" **(5 M)**

$\forall x (\neg p) \cap$

$A - B$