Name _____

Row 1 2 3 4 5

Homework 13
CS 313H

The important issue is the logic you used to arrive at your answer.

1. Prove that for all sets $A, B,$ and C :

$$(A \sim B) \times (C \sim B) \subseteq A \times C.$$

2. Prove that for all sets $A, B, C,$ and D :

$$(A \subseteq B \wedge C \subseteq D) \Rightarrow (A \times C \subseteq B \times D)$$

3. For $n \geq 1,$ let A^n denote the set of n-tuples of elements from set A. We may define it by $A^1 = A$ and for $n \geq 1,$ $A^{n+1} = A^n \times A$. Use induction to prove for $n \geq 1$:

$$A \subseteq B \Rightarrow A^n \subseteq B^n$$

4. Prove that for all sets A and B:

$$(A = B) \Leftrightarrow (P(A) = P(B))$$