

## Proof Notebook Problem 2

**The Problems:** (In a group of 3 or 4 people, everyone should do a different problem)

1) Prove the following: If  $C \subseteq A$  and  $D \subseteq B$ , then  $D - A \subseteq B - C$

2) Prove that  $(A \times B) \cap (C \times D) \subseteq (A \cap C) \times (B \cap D)$

3)  $\mathcal{P}(A) \cup \mathcal{P}(B) \subseteq \mathcal{P}(A \cup B)$

4)  $A \cup (A^c \cap B) = A \cup B$

*Please do not do multiple problems: you should have a clear mind for the peer review and workshop in that you've never seen a proof of the problem before.*

### Due Dates:

Item	Due Date	Method
Draft 1	Wednesday, September 3 (10pm)	Blackboard
Peer Review 1	Before 2 <sup>nd</sup> draft	On your own – nothing to turn in
Draft 2	Thursday, September 4	In class
Draft 3	Wednesday, September 10 (10pm)	Blackboard
First Proof Workshop	Before final version	Schedule a time to meet with me.
Final Version	Tuesday, September 16	In class

### The peer review process:

1. Schedule a time to meet in pairs or groups of 3. Come to the meeting with draft 1 completed. One person should plan to do  $f$ , while the other person plans to do  $g$ .
2. Person 1 presents their proof on the board; Person 2 analyzes each step:
  1. Is this step intelligible or nonsense?
  2. Does this step say what the Person 1 thinks it says?
  3. Does this step follow from the previous steps?
  4. Is it clear why this step follows?
3. Switch roles and repeat (2).

### The proof workshop process:

There will be 3 or 4 workshops throughout the semester. Schedule a time to meet with me, plan on having about 15 minutes per person. As a group we'll go through each line of your proof and analyze it in terms of both accuracy and clarity.