

Assignment #4 due Wednesday 9/28 by 5pm

Exam 1 covers chapters 1, 2, 3 Assignments 1, 2, 3, 4
scheduled for Friday 9/30

Send drafts of homework to Dropbox from now on
rather than email.

Quick Summary

Subsets Def $A \subseteq B$ when $(\forall x)(x \in A \rightarrow x \in B)$

To prove that $A \subseteq B$, there are 3 basic strategies.

Direct Proof assume $x \in A$, show $x \in B$

Contrapositive assume $x \notin B$, show $x \notin A$.

Contradiction Assume $x \in A$ and $x \notin B$, find a contradiction.

Implications

To prove that $P \rightarrow Q$, there are 3 basic strategies.

Direct Proof Assume P is true, show Q is true.

Contrapositive Assume Q' is true, show P' is true.

Contradiction Assume $P \wedge Q'$ is true, find a contradiction.

Set equality

To show that $A=B$, show that $A \subseteq B$ and $B \subseteq A$.

Logical Equivalence

To show that $P \leftrightarrow Q$, show that $P \rightarrow Q$ and $Q \rightarrow P$

Template for #5 on Assignment #4

We are proving that

$(B-A) \cup A = B$ if and only if $A \subseteq B$.

(\rightarrow) Assume $(B-A) \cup A = B$ and prove $A \subseteq B$.

OR

Assume $A \not\subseteq B$ and prove $(B-A) \cup A \neq B$. * I would use Dis.

OR

Assume $(B-A) \cup A = B$ but $A \not\subseteq B$ and find contradiction

(\leftarrow) Assume $A \subseteq B$ and prove $(B-A) \cup A = B$. * I would use Dis.

OR

Assume $(B-A) \cup A \neq B$ and prove $A \not\subseteq B$.

OR

Assume $A \subseteq B$ and $(B-A) \cup A \neq B$ and find a contradiction

