4) a) i) $(A \vee B) \rightarrow C$

$\neg(A \vee B) \vee C$ $\quad (P \rightarrow Q == \neg P \vee Q)$

$(\neg A \wedge \neg B) \vee C$

$(\neg A \vee C) \wedge (\neg B \vee C)$

$\boxed{(A \rightarrow C) \wedge (B \rightarrow C)}$ $(\neg P \vee Q = P \text{-} Q)$

ii) Given A, $A \rightarrow C$ per formula above

b) i) $(B \rightarrow C) \Leftrightarrow \neg B \vee C$

ii) $(A, \vee C) \rightarrow D$

$\neg(A \vee C) \vee D$

$(\neg A \wedge \neg C) \vee D$

$(\neg A \vee D) \wedge (\neg C, D)$

iii) $A \vee B$ ⋮ Not sure

Got these

Problem 5:

i) There is a model M with n elements

ii) If $x_0 \in M$ exists, x_0 has successor x_1 by constraint 0.

iii) $x_1 > x_0$ by by constraint 4

iv) Do for all x's in Model M.

v) x_n successor must be larger than x_n.

vi) x_n must be own successor.

vii) This previous pb. violates the 6th constraint.