

EE 2720

Homework #3, Spring 05

Due Wednesday March 16, 2005
at 9:30 am ~~in~~ my office;

(Room EE 245)

EE 2720, Homework #3

(1)

Note: Please STAPLE your homework

Note: Problems 1-10 below ask you to prove theorems found in handout #5.

Problem 1: Prove theorem $(T1')$. You are not allowed to use the Principle of Duality. In other words don't tell me because $(T1)$ is true so is $(T1')$.

Problem 2: Repeat problem 1 but now for theorem $(T2')$.

Problem 3: Repeat problem 1 but now for theorem $(T3)$.

Problem 4: Repeat problem 1 but now for theorem $(T3')$.

Problem 5: Repeat problem 1 but now for theorem $(T4)$; (there is no dual of $(T4)$ here anyways).

Problem 6: Repeat problem 1 but now for theorem $(T5')$.

Problem 7: Prove theorem $(T7)$ by using a truth table; (as explained in handout #5 this is the so called perfect induction method. See my note on page 14 of handout #5).

Problem 8: Prove theorem $(T10')$. You are not allowed to use the Principle of Duality and you are not allowed to use a truth table. You must use other theorems.

Problem 9: Prove theorem (T11'). You are not allowed to use the Principle of Duality and you are not allowed to use a truth table. Hint: Use the theorem that states $(X+Y) \cdot (X'+Z) = X \cdot Z + X' \cdot Y$. This theorem was stated and proved in handout #6; (the proof is not that difficult).

Problem 10: Prove theorem (T13') using the finite induction technique. Look on page 6 of handout #5 to see what the finite induction technique is.

Problem 11: Prove the theorem that states

$(X+Y) \cdot (X'+Z) = X \cdot Z + X' \cdot Y$. You are not allowed to use a truth table. You must use the theorems provided in handout #5. of course, you must provide a different proof than the one I provided in handout #6; (proof is really easy).