CS 486, Spring '01
February 1, 2001
10 questions

Quiz 1

1. degree $(((p \vee q) \& r) \supset q)) = 4$ **false**

2. In any tree, finite or infinite, each point has only finitely many predecessors. **true**

3. Circle each line which is not a subformula of $((p \vee q) \& r) \supset (q \& r)$ (perhaps all are or none are)
   a. $(p \vee q)$
   b. r
   c. q
   d. $(q \& r)$
   e. $r \supset q$ CORRECT ANSWER

4. The truth table for $((p \vee q) \& r) \supset (q \& r)$ has this number of rows:
   a. $2^2 = 4$
   b. $2^3 = 8$ CORRECT ANSWER
   c. $2^5 = 32$
   d. $3^3 = 27$

5. A formula X is called satisfiable iff ~X is true in at least one Boolean valuation **false**

6. left : A + right : B = right : B + left : A **true**

7. ((study implies goodgrades) and not(goodgrades)) implies not(study) is a true fact of psychology but not a tautology (logically true) **false**

8. Every propositional formula is truth functionally equivalent to either t or f **false**

9. Circle the best among these translations of $\exists X$:Form.$(X = p_1)$
   a. all formulas contain p_1
   b. p_1 is a formula
   c. some formula is p_1 CORRECT ANSWER
   d. no formula is p_1

10. Circle all statements that are in our metalanguage
    a. $\forall$ X : Form.$(X = p_1$ or not$(X = p_1))$ CORRECT ANSWER
    b. $(p_1 \vee p_2)$
    c. $(p_1 \supset p_1)$ is a tautology CORRECT ANSWER
    d. $(p_1 \supset (p_2 \supset p_1))$