1. Problem 1 [30 pts] (5pts each): Logical Equivalence  
    Prove each of the following by applying equivalence rules. State the equivalence law you are

applying with each step in your proof.

* 1. ¬(p∨(¬p∧q))≡¬p∧¬q

ii. p→(q→r)≡q→(p→r)

iii. ¬(p→q)≡p∧¬q iv. p→q≡¬q→¬p

v. p→(q∧r)≡(p→q)∧(p→r)  
vi. ((p→q)∧(q→r))→(p→r)≡T (atautology)

A and neither B nor C ====> A ∧ ¬(B ∨ C) ? A ∧ ¬(B ∧ C)

A and neither B and C

(A ∧ ¬B) ∨ (B ∧ A)

?: A ∧ ¬B ∨ B ∧ A => A ∧ T ∧ A