Propositional Logic

Prove the following three Boolean equations:
(Note: ! means NOT(¬); & means AND(^); and | menas OR(v)

a) !A & B | A & !B = (!A | !B) & (A | B)
b) (A & B | C) & B = A & B & !C | !A & B & C | A & B & C
c) A & B | A & B & C | A & !B = A

For each pair of propositions P and Q, state whether P ≡ Q.
(Note: ! means NOT(¬); & means AND(^); and | menas OR(v)

a) P = p, Q = p | q
b) P = p → q, Q = !p | q
c) P = p → q, Q = !q → !p
d) P = (p → q) & (q → r), Q = p → r
e) P = (p → q) → r, Q = p → (q → r)

Expand the following Boolean equations with De Morgan's Laws

a) f = !(A | B) & !(A & B & C) & !(!A & C)
b) f = !((A & B | !B & C) | (B & !C | !A & B))
c) f = !((A & B | !B & C) & (A & C | !A & !C))

Date:	**Group #:**
Group Members: (Circle the group representative name)	