If A, B, C, D are any four sets then prove that –
(A∩B)X(C∩D) = (AXC)∩(BXD)

Consider(x,y)
(x,y)∈(A∩B)×(C∩D)
x∈(A∩B) ∧ y∈(C∩D)
(x∈A and x∈B) ∧ (y∈C and y∈D)
(x∈A ∧ y∈C) and (x∈B ∧ y∈D)
(x,y)∈(A∧C) and (x,y)∈(B∧D)
(x,y)∈((A∧C) and (B∧D))
(x,y)∈((A×C) ∩ (B×D))

(A×C) ∩ (B×D)

Related posts:

1. SET
2. Mathematical induction
3. Relation
4. Net 34
5. prove that- AX(B∩C) = (AXB) ∩ (AXC)
6. Prove that- A∩(B∪C) = (A∩B) ∪ (A∩C)
7. Show that- (P∩Q)X(R∩S) = (PXR)∩(QXS)
8. Binary operations
9. Algebraic structure
10. Group
11. Show that (…, -4, -3, -2, -1, 0, 1, 2, 3, 4,…} is group

12. Show that a*b=b*a
13. if a*c = c*a and b*c = c*b, then (a*b)*c = c*(a*b)
14. Undirected Graph and Incident Matrix
15. Prove the following by using the principle of mathematical induction for all n ∈ N, $1^3 + 2^3 + 3^3 + \ldots + n^3 = [n (n + 1)/2]^2$
16. Prove that $G=\{-1,1,i,-i\}$ is a group under multiplication.
17. Hasse diagram for the “less than or equal to” relation on the set S= { 0,1,2,3,4,5}