Minh Nguyen

Quiz over week 4 material document

5) For any sets A and B, prove thatt A - B ⊆

A - B means that if an element x exists in A, then x does not exist in B. The complement of B, which is means if an element x existed in , then it does not exist in B. Since A - B means no element x exist in B, then A-B is a subset of

6)

For any sets A,B, and C, prove that U C = ∩ (C U B)

Proof by membership table

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A | B | C |  |  |  |  | U C |  | C U B | ∩ (C U B) |
| 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |
| 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |

The table shows the same membership values for both equations. Thus proving the result is true.

7) A) 3 + 6 + 12 + 24 + 48 + 96 + 192 + 384 + 768 + 1536 + 3072 +6144 = 12,285

B) 5 + 9 + 13 + 17 + 21 + 25 + 29 + 33 + 37 + 41 = 230

C) 5+6+7+8+9+10+11+12+13+14+15+16+17+18+19+20 = 200

D) 9 + 27 + 81 + 243 + 729+ 2,187 + 6,561 + 19,683 + 59,049 +177,147 = 265,716