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Math 301

HW 6

1. by def. of subset
2. by implication 2,3
3. conjunction 3,4
4. def. of set equality 3,5

Put 6,5 at 1,2 and have 1 as result will also make sense. Therefore, 1 and 6 are equivalent.

1. For any sets

Proof.

1. def. of subset
2. contraposition
3. def. of complement
4. def. of subset

Reverse of the above step will show . Therefore, 1 and 5 are equivalent.

proof.

2 is from problem 1. 3 is by the theorem. 4 is from problem 2. 5 is by DM law. Reverse of above steps will also make sense. Therefore, 1 and 5 are equivalent.

negation:

Let

and

Let

#contradiction

Thus, there is no intersection between the intervals

1. A) 1.

2. dist.

3. DM.

B) 1.

2. dist.

3. op.

4. op.

1. A)

Let

Thus, , so

B)

Let k an integer for floor

and

and

Let

Thus,

C)

Let an integer for ceiling

Let

Thus,

D)

Case1:

since

Case2:

so,

Thus,

E)

Let

, and it is true as shown in part D

Proof.

When i=1,

is true

When ,

Thus, by induction.