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| **COMP-232**  **MATHEMATICS FOR COMPUTER SCIENCE Fall 2019**  Assignment #3  **Shadi Jiha**  **#** **40131284** |

**PROBLEM 1: Let A and B be sets. Prove that A ⊆ B if and only if P(A) ⊆ P(B).**

Let and . Let’s define and :

We can see here that is a subset of , because contains which is equal to . Therefor it is a proof that

**PROBLEM 2: Let A, B, C, and D be sets. Prove or disprove the following:**

Let

We can clearly see that this is false because doesn’t equal

**PROBLEM 3: Give an example of two uncountable sets A and B such that A – B is:**

1. Countably Infinite.
2. Uncountable.