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Assignment 15 Quiz 11 Pt 2

**Question 1**

In a sample space S there are 3 events A, B and C, such that A∪ B ∪ C = S. A and B are mutually exclusive. P(A) = 0.5 and P(B) = 0.2. Prove or disprove that P(C) = 0.1.

**Proof:**

Since A ∪ B ∪ C = S, then C = S – (A ∪ B). Thus, by the formula for the probability of the complement of an event,

P(C) = P((A ∪ B)C) = 1 - P(A ∪ B).

P(A ∪ B) = P(A) + P(B) = 0.5 + 0.2 = 0.7

P(C) = 1 – 0.7 = 0.3

Hence, P(C) = 0.3 != 0.1