Problem 60-2

David Gieselman

November 2020

 $A \cup B \cup C = S$ $P(A) = \frac{1}{2}$ $P(B) = \frac{2}{3}$ $P(A \cup B) = \frac{5}{6}$ $1 \quad A$ A

$$A \cup B - A = \frac{2}{6}$$
$$A \cup B - B = \frac{1}{6}$$
$$A \cap B = A \cup B - ((A \cup B - B) + (A \cup B - A)) = \frac{2}{6}$$

В

No, because A and B aren't mutually disjoint, $A \cap B$ is nt 0. C This is equivilent to $A \cup B \cup C - A \cup B$ so we're supposed to find P(S)-P($A \cup B$) which is $1 - \frac{5}{6} = \frac{1}{6}$ D

$$P(C \cap (A \cup B)) = P(C) + P(A \cup B) - P(C \cup (A \cup B))$$
$$\frac{5}{12} = P(C) + \frac{5}{6} - 1 = P(C) - \frac{1}{6}$$

 $P(C) = \frac{7}{12}$

Had some unexpected life issues yesterday that disrupted my work. If I had started on Wednesday than I probably would've been able to finish, but I didn't.