

Question 23925 if A and B are two candidates mutually exclusive events and $P(A \cup B)$ is not equal to 0, then show that $P[A|A \cup B]P(A)/P(A)+P(B)$

Solution. Write by the definition of conditional probability $P(A|A \cup B) = \frac{P(A \cap (A \cup B))}{P(A \cup B)} = \frac{P(A)}{P(A \cup B)}$, since A and B are mutually exclusive and, thus, $P(A \cup B) = P(A) + P(B)$ and $A \cap (A \cup B) = A$.