

Question 12.13.2.9

If A and B are two events such that $\Pr(A) = \frac{1}{4}$, $\Pr(B) = \frac{1}{2}$ and $\Pr(AB) = \frac{1}{8}$. Find $\Pr(A'B')$.

solution: Since,

$$A'B' = (A + B)' \quad (1)$$

$$\implies \Pr(A'B') = \Pr((A + B)') \quad (2)$$

$$= 1 - \Pr((A + B)) \quad (3)$$

we also know that,

$$\Pr((A + B)) = \Pr(A) + \Pr(B) - \Pr(AB) \quad (4)$$

$$= \frac{1}{4} + \frac{1}{2} - \frac{1}{8} \quad (5)$$

$$= \frac{5}{8} \quad (6)$$

Hence, we get

$$\Pr(A'B') = 1 - \frac{5}{8} \quad (7)$$

$$= \frac{3}{8} \quad (8)$$