Assignment 5

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Outline

Question

Let E and F be events with $P(E) = \frac{3}{5}$ and $P(F) = \frac{3}{10}$ and $P(EF) = \frac{1}{5}$. Are E and F independent?

Solution

Given

$P(E) = \frac{3}{5}, P(F) = \frac{3}{10}$ and $P(EF) = \frac{1}{5}$

Theorem

Two sets, say A and B, are independent iff $P(AB) = P(A)P(B)$

Conclusion

$P(E)P(F) = \frac{3}{5} \times \frac{3}{10} = \frac{9}{50} \neq \frac{1}{5} \neq P(EF)$. Thus, the two sets are not equal. Hence, The given events E and F are dependent.