Indian Institute of Technology Hyderabad

PROBABILITY ASSIGNMENT

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1 problem

Let A and B be independent events with $P(A) = 0.3$ and $P(B) = 0.4$ Find

1. $P(AB)$
2. $P(A + B)$
3. $P(A|B)$
4. $P(B|A)$

2 solution

Since A and B are independent events, we have

1. $P(AB) = P(A)P(B)$
   $P(AB) = 0.3 \times 0.4$
   $P(AB) = 0.12$
2. $P(A + B) = P(A) + P(B) - P(AB)$
   $P(A + B) = 0.3 + 0.4 - 0.12 = 0.58$
3. $P(A|B) = \dfrac{0.12}{0.40} = 0.3$
4. $P(B|A) = \dfrac{P(B + A)}{P(A)} = \dfrac{0.12}{0.30} = 0.4$