Esercizio 2

sabato 8 maggio 2021 19:41

$P(A) = \frac{1}{3}$

$P(B) = \frac{1}{4}$

$P(A \cap B) = \frac{1}{8}$

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① Sono indipendenti ?

$P(A \cap B) = P(A) \cdot P(B)$

$P(A) \cdot P(B) = \frac{1}{3} \cdot \frac{1}{4} = \frac{1}{12}$

$P(A \cap B) = \frac{1}{8}$

A e B Non sono indipendenti

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② $P(A \cup B)$, Siccome e sono indipendenti

$P(A \cup B) = [P(A) + P(B) - P(A \cap B)]$

$= \frac{1}{3} + \frac{1}{4} - \frac{1}{8} = \frac{8+6-3}{24} = \frac{11}{24}$

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② NON ESSENDO A e B INDIPENDENTI

- $P(A \cap \bar{B}) = P(A) - P(A \cap B)$

$$= \frac{1}{3} - \frac{1}{8} = \frac{8-3}{24} = \frac{5}{24}$$

- $P(\bar{A} \cap B) = P(B) - P(A \cap B)$

$$= \frac{1}{4} - \frac{1}{8} = \frac{2-1}{8} = \frac{1}{8}$$

- $P(\bar{A} \cap \bar{B}) = 1 - P(A) - P(B) + P(A \cap B)$

$$= 1 - \frac{1}{3} - \frac{1}{4} + \frac{1}{8} = \frac{24 - 8 - 6 - 3}{24} = \frac{13}{24}$$

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③ $P(\bar{A} \cup \bar{B}) = P(\bar{A} \cup \bar{B}) = [P(\bar{A}) + P(\bar{B}) - P(\bar{A} \cap \bar{B})$

$$= \frac{2}{3} + \frac{3}{4} - \frac{13}{24} = \frac{16 + 18 - 13}{24} = \frac{21}{24} = \frac{7}{8}$$