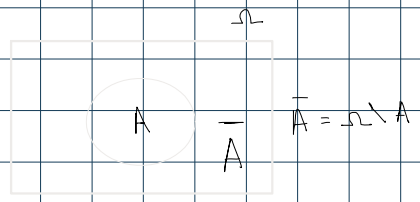
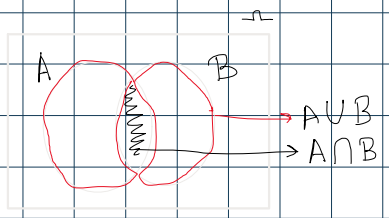
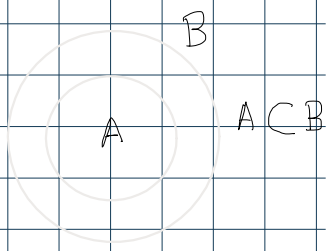
T - 28/2/2023

04 March 2023 16:11







$$P(A/B) = \frac{P(A \cap B)}{P(B)} \iff P(A \cap B) = P(A/B)\,P(B)$$

$$P(B/A) = \frac{P(B \cap A)}{P(B)} \iff P(B \cap A) = P(B/A) \cdot P(B)$$

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

$P(A/B) \overset{MAS}{\neq} P(B/A)$

Logo, $P(A \cap B) = P(A/B) \cdot P(B) = P(B/A) \cdot P(A)$

Se A e B forem independentes, então:

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

$$P(A/B) = P(A)$$

$$P(B/A) = P(B)$$

Exercício comparência de seguros:

$P(A/B) = 0{,}02$ $\quad P(B) = 0{,}1$

$P(A/M) = 0{,}1$ $\quad P(M) = 0{,}6$

$P(A/E) = 0{,}25$ $\quad P(E) = 0{,}3$

a) $P(A) = ?$

$$P(A) = \overbrace{P(A/B)\,P(B)}^{P(A \cap B)} + \overbrace{P(A/M)\,P(M)}^{P(A \cap M)} + \overbrace{P(A/E)\,P(E)}^{P(A \cap E)} = 0{,}136$$

b) $P(E/A) = ?$

$$P(E/A) = \frac{P(E \cap A)}{P(A)} = P(A/E)\,P(E) = 0{,}5515$$

$$P(E/A) = \frac{P(E \cap A)}{P(A)} = \frac{P(A/E)\,P(E)}{P(A)} = 0,5515$$

$P(A \cap E) = P(E \cap A)$ ✓

c) $P(M/\bar{A}) = \frac{P(M \cap \bar{A})}{P(\bar{A})} = \frac{P(\bar{A}/M)\cdot P(\bar{A})}{1-0,344} = \frac{(1-0,1)\cdot 0,6}{1-0,344} = 0,625$

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

$P(\bar{A}/M) = 1 - P(A/M)$