04.11.

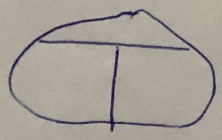
СЕМ упр.

Зад. $P(+|\text{болен}) = 99\%$

$P(-|\text{болен}) = 99\%$

$P(\text{болен}) = 0{,}5\%$

$P(\text{болен}|+) = ?$



$H_1 \dots H_n$ е разбиване на Ω

$$P(H_i|A) = \frac{P(A \cap H_i)}{P(A)} = \frac{P(A|H_i) \cdot P(H_i)}{P(A)} = \frac{P(A|H_i) \cdot P(A)}{\sum_{i=1}^{n} P(A|H_i) P(H_i)}$$

$A = \{\text{човекът е пълнолетен}\}$

$H_2 = \{\text{болни}\}$

$H_1 = \{\text{здрави}\}$

$P(H_1|A) = ?$

$P(A|H_1) = 99\%$ $\quad P(H_1) = 0{,}5\%$

$P(A|H_2) = 1\%$ $\quad P(H_2) = 99{,}5\%$

$$P(H_1|A) = \frac{P(A|H_1)P(H_1)}{P(A|H_1)P(H_1) + P(A|H_2)P(H_2)} = \frac{99\% \cdot 0{,}5\%}{99\% \cdot 0{,}5\% + 1\% \cdot 99{,}5\%} = \frac{49{,}5}{49{,}5 + 99{,}5} \approx \frac{1}{3}$$