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12 výrobků

4 vadné

právě 2 vadné

$\binom{12}{5}$

5 výběru

$\binom{4}{2} \cdot \binom{8}{3}$

elementární jev

prostor elem. jevů Ω

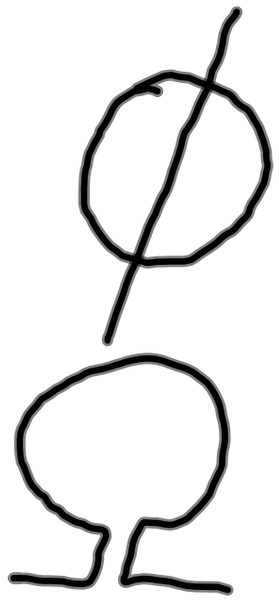
$$\Omega = \{1, 2, 3, 4, 5, 6\}$$

$A = \{2, 4, 6\}$

$B = \{4, 5, 6\}$

$A \cap B = \{4, 6\}$

A $A \setminus B$



A

m

$0 \leq m(A) \leq m$

$m(A)$

$$\frac{m(A)}{m} = h(A)$$

$$\boxed{0 \leq h(A) \leq 1}$$

$A_1, A_2, \dots, A_m$ po. disjunktní

$$A = \bigcup_{i=1}^{m} A_i$$

$$h(A) = \sum_{i=1}^{m} h(A_i)$$

$$n(A) = n(A_1) + \dots + n(A_m)$$

$$n \to \infty$$

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

(v) $P(\emptyset) = 0$

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

$$\Omega = \{\omega_1, \omega_2, \omega_3, \omega_4, \omega_5, \omega_6\}$$

N ω_i

$$P(\{\omega_1\}) = P(\{\omega_2\}) = \dots$$

$$\dots = P(\{\omega_6\})$$

$$P(\{\omega_i\}) = \frac{1}{6} \qquad i = 1, 2, \dots, 6$$

Ω

N

A N_A

$$P(A) = \frac{N_A}{N}$$

Př. 100 výr., 5 vadných

10 v. náhodně vyberu

(3 v., 7 d.)

$N = \binom{100}{10}$

$N_A = \binom{5}{3} \cdot \binom{95}{7}$

$P(A) = \frac{\binom{5}{3}\binom{95}{7}}{\binom{100}{10}}$

$\Omega = \{1, \dots, 6\}$ $\quad h(A) \approx \frac{1}{6}$

$A, B \subset \Omega$

n realizací $\quad \boxed{h(A|B)} = \frac{n(A \cap B)}{n(B)} \cdot \frac{\frac{1}{n}}{\frac{1}{n}}$

$A = \{2\}$

$B = \{2, 4, 6\}$

$h(A|B) = \frac{h(A \cap B)}{h(B)} = \frac{\frac{n(A \cap B)}{n}}{\frac{n(B)}{n}}$

$h(A|B) = \frac{\frac{1}{6}}{\frac{1}{2}} = \frac{1}{3}$

$$h(A|B) = h(A) \qquad n \to \infty$$

$$\underbrace{h(A|B)}_{} = \frac{h(A \cap B)}{\underbrace{h(B)}} \to P(A \cap B)$$

$$\to \frac{P(A \cap B)}{P(B)} = P(A|B) \searrow P(B)$$

Ω kon.

N

$B \subset \Omega$

$$P(A|B) = \frac{N_{A\cap B}}{N_B} \cdot \frac{\frac{1}{N}}{\frac{1}{N}} = \frac{\frac{N_{A\cap B}}{N}}{\frac{N_B}{N}} = \frac{P(A\cap B)}{P(B)}$$

$$h(A|B) = h(A)$$

$$\underline{P(A|\bar{B})} = P(A)$$

$$\frac{P(A \cap B)}{P(B)}$$

$$\boxed{P(A \cap B) = P(A) \cdot P(B)}$$