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MAT041 - Probabilidad y Estadística

Formulario de Probabilidades

$$P_r^n = \frac{n!}{(n-r)!} \qquad P^n_{n_1 n_2 \ldots n_k} = \frac{n!}{n_1! \cdot n_2! \cdot \ldots \cdot n_k!} \qquad C_r^n = \binom{n}{r} = \frac{n!}{(n-r)!r!}$$

$$\bigcap_{i=1}^{n} A_i^c = \left(\bigcup_{i=1}^{n} A_i\right)^c \qquad \bigcup_{i=1}^{n} A_i^c = \left(\bigcap_{i=1}^{n} A_i\right)^c$$

$$\mathbb{P}[\Omega] = 1$$

$$\mathbb{P}[A] \geq 0,\ \forall A \subset \Omega$$

$$A \subset B \Rightarrow \mathbb{P}[A] \leq \mathbb{P}[B]$$

$$A \perp B \Leftrightarrow \mathbb{P}[A \cap B] = \mathbb{P}[A] \cdot \mathbb{P}[B]$$

$$A \cap B = \emptyset \Rightarrow \mathbb{P}[A \cap B] = 0$$

$$\mathbb{P}\left[\bigcup_{i=1}^{n} A_i\right] = \sum_{i=1}^{n} \mathbb{P}[A_i] \Leftrightarrow A_i \cap A_j = \emptyset \quad \forall i \neq j$$

$$\mathbb{P}[A] = \frac{\#A}{\#B} \Leftrightarrow \Omega\text{-Equiprobable}$$

$$\mathbb{P}[A] = 1 - \mathbb{P}[A^c]$$

$$\mathbb{P}[A \cup B] = \mathbb{P}[A] + \mathbb{P}[B] - \mathbb{P}[A \cap B]$$

$$\mathbb{P}[A|B] = \frac{\mathbb{P}[A \cap B]}{\mathbb{P}[B]}$$

$$\mathbb{P}[D_k|C] = \frac{\mathbb{P}[C|D_k] \cdot \mathbb{P}[D_k]}{\mathbb{P}[C]}$$

$$A \perp B \Leftrightarrow \text{Eventos independientes}$$

$$\left.\begin{array}{rcl} \bigcup_{i=1}^{n} D_i & = & \Omega \\ D_i \cap D_j & = & \emptyset, \forall i \neq j \end{array}\right\} \Rightarrow \mathbb{P}[C] = \sum_{i=1}^{n} \mathbb{P}[C|D_i] \cdot \mathbb{P}[D_i], \quad \forall C \subset \Omega$$