28 de Septiembre de 2016.

+ <u>Variable aleatoria</u>   <u>Capítulo 2</u>

$$S = \{ S_1, S_2, \ldots S_n \} \quad P(S_k) = \frac{1}{n}$$

$$S_{\substack{MONEDA \\ 3 \, veces}} = \{ (S,S,S), (S,S,a), (S,a,S), (a,S,S), (S,a,a), (a,S,a), (a,a,S), (a,a,a) \}$$

$$n = 8$$

$$P(e_1, e_2, e_3) = \frac{1}{8}$$

¿Cuál es la probabilidad que salga águila?

$$P(0) = P(s,s,s) = \frac{1}{8}$$

$$P(1) = P(s,s,a) + P(s,a,s) + P(a,s,s) = \frac{3}{8}$$

$$P(2) = P(s,a,a) + P(a,s,a) + P(a,a,s) = \frac{3}{8}$$

$$P(3) = P(a,a,a) = \frac{1}{8}$$

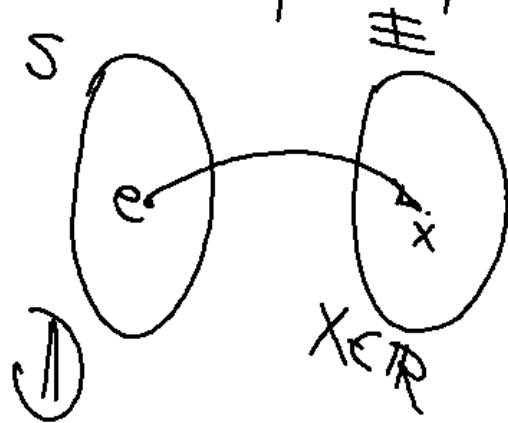↑
Variable
aleatoria

$$X = \{0, 1, 2, 3\}$$

Evento $x \subset X$

$x = 0$
$x = 1$
$x = 2$
$x = 3$

$\doteq 1'130,000$

$$P(H|d_3) = \frac{34,440}{1,130,000} \Rightarrow$$

$P(\text{García})$

$$\sharp = \left\{ \begin{array}{c} \text{Variable aleatoria se define} \\ \text{como aquella que toma valores reales} \end{array} \right\}$$

S $\sharp$

e x

$\mathbb{D}$ $X \in \mathbb{R}$

$$S = \{ (1,1), (1,2), (1,3), \ldots, (2,1) \ldots \quad \}$$

$$P(1,1) = \frac{1}{36}$$

$$E = \{ 2, \ldots, 12 \} =$$

$$P(2) = P(1,1) \Rightarrow \frac{1}{36}$$

$$P(3) = P(1,2) + P(2,1) \Rightarrow \frac{2}{36}$$

$$P(6) = P(1,5) + P(2,4) + P(3,3) + P(4,2) + P(5,1) = \frac{5}{36}$$

$$P(7) = P(1,6) + P(2,5) + P(3,4) + P(4,3) + P(5,2) + P(6,1) = \frac{6}{36}$$

$$P(12) = P(6,6) = \frac{1}{36}$$

distribución de Probabilidades

$$X = \{x_1, x_2, x_3, \ldots, x_n\}$$

$$P(x_i) = \begin{cases} P(X = x_i) \; ; \; x_i \in \mathbb{R} \\ 0 \qquad \; ; \; x_i \notin \mathbb{R}_n \end{cases}$$
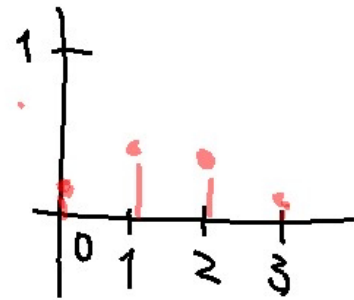
$$P(x_k) \geq 0 \quad \forall k = i \ldots n$$

$$\sum_{k=1}^{n} P(x_k) = 1$$

$$(x_i, p(x_i))$$

$$\left(0, \frac{1}{8}\right), \left(1, \frac{3}{8}\right), \left(2, \frac{3}{8}\right), \left(3, \frac{1}{8}\right)$$

$$F(x_i) = \sum p(x_i) \qquad i = (1 \ldots i-1)$$

distribución de Probabilidades

$$\phi(0) = \frac{1}{8} \qquad\qquad F(0) = \frac{1}{8}$$

$$\phi(1) = \frac{3}{8} \qquad\qquad F(1) = \frac{4}{8}$$

$$\phi(2) = \frac{3}{8} \qquad\qquad F(2) = \frac{7}{8}$$
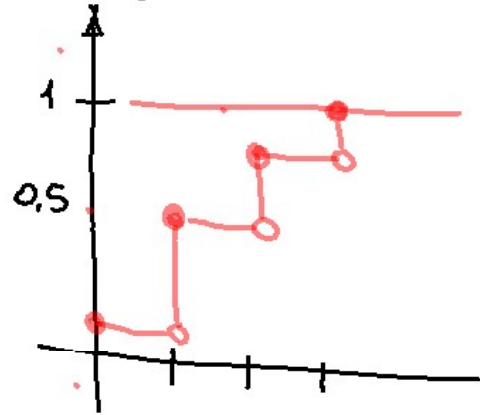
$$\phi(3) = \frac{1}{8} \qquad\qquad F(3) = 1$$

Simple.   Acumulada

Función variable aleatoria discreta

$$R_x = (x_1, x_2, \ldots, x_n) \qquad f \to R_x \text{ Dominio}$$

a) $Y = f(x)$

b) $\forall \, y_i \in R_y \quad P(Y = y_i) = \sum \left(P(x = x_i) \right) \quad f(x_i) = y_i$

S