

MA34B - Estadística - Tabla de Distribuciones

Distribución	Sigla	Densidad	E(X)	Var(X)	f.g.m.
Bernoulli	Ber(p)	$p^k (1-p)^{1-k}$ $k=0,1 \quad 0 \leq p \leq 1$	p	p(1-p)	$(pe^t + 1-p)$
Binomial	B(n,p)	$\binom{n}{z} p^z (1-p)^{n-z}$ $z=0, \dots, n \quad 0 \leq p \leq 1$	np	np(1-p)	$(pe^t + 1-p)^n$
Binomial Negativa	BN(r,p)	$\binom{r-1}{z-1} p^{z-1} (1-p)^{n-z}$ $z=1, \dots, n \quad 0 \leq p \leq 1$	$\frac{r(1-p)}{p}$	$\frac{r(1-p)}{p^2}$	$\left(\frac{pe^t}{1-(1-p)e^t} \right)^r$
Beta	Beta(α, β)	$\frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)} x^{\alpha-1} (1-x)^{\beta-1}$ $0 < x < 1 \quad \alpha > 0, \beta > 0$	$\frac{\alpha}{\alpha+\beta}$	$\frac{\alpha\beta}{(\alpha+\beta)^2(\alpha+\beta)}$	
Poisson	P(λ)	$\frac{\lambda^k e^{-\lambda}}{k!}$ $k=0, \dots, \infty \quad \lambda > 0$	λ	λ	$e^{\lambda(e^t-1)}$
Uniforme	U(a,b)	$\frac{1}{b-a} \quad a \leq x \leq b$ $0 \quad \text{Si no}$	$\frac{a+b}{2}$	$\frac{(b-a)^2}{12}$	$\frac{e^{bt} - e^{at}}{(b-a)t}$

Gamma	$G(\alpha, \beta)$	$\frac{\beta^\alpha}{\Gamma(\alpha)} x^{\alpha-1} e^{-\beta x}$ $x > 0 \quad \alpha > 0, \beta > 0$	$\frac{\alpha}{\beta}$	$\frac{\alpha}{\beta^2}$	$\left(\frac{\beta}{\beta-t}\right)^\alpha$
Exponencial	$\text{Exp}(\lambda)$	$\lambda e^{-\lambda x} \quad x > 0, \lambda > 0$	$\frac{1}{\lambda}$	$\frac{1}{\lambda^2}$	$\frac{\lambda}{\lambda-t}$
Chi Cuadrado	χ_n^2	$\frac{x^{\frac{n}{2}-1} e^{-\frac{x}{2}}}{2^{\frac{n}{2}} \Gamma\left(\frac{n}{2}\right)} \quad x \geq 0$	n	2n	$\frac{1}{(1-2t)^{n/2}}$
Normal	$N(\mu, \sigma^2)$	$\frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{1}{2}\frac{(x-\mu)^2}{\sigma^2}}$ $-\infty \leq x \leq \infty$	μ	σ^2	$e^{t\mu + \frac{\sigma^2 t^2}{2}}$
t- Student	t_n	$\frac{\Gamma\left(\frac{n+1}{2}\right)}{(n\pi)^{\frac{1}{2}} \Gamma\left(\frac{n}{2}\right)} \left(1 + \frac{x^2}{n}\right)^{-\frac{(n+1)}{2}}$ $-\infty \leq x \leq \infty$	0 para $n > 1$	$\frac{n}{n-2}$ para $n > 2$	
F- Fisher	$F_{m,n}$	$\frac{\Gamma\left(\frac{1}{2}(m+n)\right) m^{\frac{m}{2}} n^{\frac{n}{2}}}{\Gamma\left(\frac{1}{2}m\right) \Gamma\left(\frac{1}{2}n\right)} \frac{x^{\frac{m}{2}-1}}{(mx+n)^{\frac{m+n}{2}}}$ $x > 0$			

OBS: $\Gamma(p) = \int_0^\infty x^{p-1} e^{-x} dx$ y $\Gamma(p) = (p-1)\Gamma(p-1)$