Tabla de distribuciones discretas

$Modelo$	$p(X=k)$	$E[X]$	$Var[X]$	$G_X(z)$
Bernoulli $\sim Be(p)$	$\begin{cases} p(X=1)=p \\ p(X=0)=1-p \end{cases}$	p	$p(1-p)$	$(1-p)+pz$
Binomial $\sim Bin(N,p)$	$\binom{N}{k}p^i(1-p)^{N-k}$	Np	$Np(1-p)$	$((1-p)+pz)^N$
Uniforme $\sim U(1,N)$	$\frac{1}{N}$	$\frac{N+1}{2}$	$\frac{N^2-1}{12}$	$\frac{1}{N}\frac{z(z^N-1)}{z-1}$
Poisson $\sim Po(\lambda)$	$\frac{\lambda^k}{k!}e^{-\lambda}$	λ	λ	$e^{\lambda(z-1)}$
Geométrica $\sim Geom(p)$	$p(1-p)^{k-1}$	$\frac{1}{p}$	$\frac{1-p}{p^2}$	$\frac{pz}{1-(1-p)z}$
Binomial negativa $\sim BinN(r,p)$	$\begin{cases} 0 & \text{si } k<r \\ \binom{k-1}{r-1}p^r(1-p)^{k-r} & \text{si } k\geq r \end{cases}$	$\frac{r}{p}$	$r\frac{1-p}{p^2}$	$\left(\frac{pz}{1-(1-p)z}\right)^r$

Tabla de distribuciones continuas

$Modelo$	$f_X(x)$	$E[X]$	$Var[X]$	$G_X(z)$
Uniforme $\sim U(a,b)$	$\frac{1}{b-a}\mathbb{I}_{[a,b]}$	$\frac{b+a}{2}$	$\frac{(b-a)^2}{12}$	1 en $t=0$, $\frac{e^{ibt}-e^{iat}}{it(b-a)}$
Exponencial $\sim Exp(\lambda)$	$\lambda e^{-\lambda x}, x\geq 0, \lambda>0$	$\frac{1}{\lambda}$	$\frac{1}{\lambda^2}$	$\frac{\lambda}{\lambda-it}$
Normal $\sim N(\mu,\sigma^2)$	$\frac{1}{\sqrt{2\pi\sigma^2}}e^{-\frac{(x-\mu)^2}{2\sigma^2}}$	μ	σ^2	$e^{i\mu t-\frac{\sigma^2t^2}{2}}$
Gamma $\sim Gamma(\lambda,\tau)$	$\frac{\lambda^\tau}{\Gamma(\tau)}x^{\tau-1}e^{-\lambda x}, x>0, \lambda,\tau>0$	$\frac{\tau}{\lambda}$	$\frac{\tau}{\lambda^2}$	$\left(1-\frac{it}{\lambda}\right)^{-\tau}$
Beta $\sim Beta(\alpha,\beta)$	$\frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)}x^{\alpha-1}(1-x)^{\beta-1}, x\in[0,1]$	$\frac{\alpha}{\alpha+\beta}$	$\frac{\alpha\beta}{(\alpha+\beta)^2(\alpha+\beta+1)}$	Sin forma sencilla
Weibull $\sim Weibull(\alpha,\beta)$	$\frac{\alpha}{\beta}\left(\frac{x}{\beta}\right)^{\alpha-1}e^{-(x/\beta)^\alpha}, x,\alpha,\beta>0$	$\beta\Gamma\left(1+\frac{1}{\alpha}\right)$	$\beta^2\left[\Gamma(1+\frac{2}{\alpha})-\Gamma^2(1+\frac{1}{\alpha})\right]$	$\sum_{k\geq 0}\frac{(it)^k\beta^k}{k!}\Gamma(1+\frac{k}{\alpha})$
Cauchy $\sim Cauchy(\theta,\gamma)$	$\frac{1}{\pi\gamma}\frac{1}{1+(\frac{x-\theta}{\gamma})^2}, \gamma>0$	No definida	No definida	$e^{\theta it-\gamma\|t\|}$
χ^2_p	$\frac{1}{\Gamma(p/2)2^{p/2}}x^{\frac{p}{2}-1}e^{-\frac{x}{2}}, x>0, p\in\mathbb{N}$	p	$2p$	$(1-2it)^{-\frac{p}{2}}$
Doble expon $\sim DobExp(\mu,\gamma)$	$\frac{1}{2\gamma}e^{-\frac{\|x-\mu\|}{\gamma}}, \gamma>0$	μ	$2\gamma^2$	$\frac{e^{\mu it}}{1+\gamma^2t^2}$
Lognormal $\sim LogN(\mu,\sigma^2)$	$\frac{1}{\sigma\sqrt{2\pi}}\frac{1}{x}e^{-\frac{(\ln x-\mu)^2}{2\sigma^2}}, x,\sigma>0$	$e^{\mu+\frac{\sigma^2}{2}}$	$e^{2(\mu+\sigma^2)}-e^{2\mu+\sigma^2}$	Sin forma sencilla