| PRINCIPALES DISTRIBUCIONES DISCRETAS | | | |
|---|---|---|---|
| **Distribución** | **Función de Probabilidad** | **Media** | **Varianza** |
| Uniforme Discreta UD(a, b) | $\frac{1}{b-a+1}, \quad x = a,\ (a+1),\ ....,\ b$ | $\frac{a+b}{2}$ | $\frac{(b-a+1)^2-1}{12}$ |
| Bernouilli Be(p) | $p^x(1-p)^{1-x}, \quad x = 0 \text{ ó } 1$ | p | p(1-p) |
| Binomial Bi(n, p) | $\binom{n}{x} p^x(1-p)^{n-x}, \quad x = 0, 1, 2, ...., n$ | np | np(1-p) |
| Poisson Po(λ) | $\frac{e^{-\lambda}\lambda^x}{x!}, \quad x = 0, 1, 2, ....$ | λ | λ |
| Geométrica Ge(p) = nº de pruebas hasta el primer éxito<br><br>Geométrica Ge(p) = nº de fracasos hasta el primer éxito | $(1-p)^{x-1}p, \quad x = 1, 2, ....$<br><br>$(1-p)^x p, \quad x=0, 1, 2, ...$ | $\frac{1}{p}$<br><br>$\frac{1-p}{p}$ | $\frac{(1-p)}{p^2}$<br><br>$\frac{(1-p)}{p^2}$ |
| Hipergeométrica H(N, n, p) | $\frac{\binom{n}{x}\binom{N-k}{n-x}}{\binom{N}{n}}, \quad x = 0, 1, ..., \min\{k, n\}$<br><br>$\text{con } p = \frac{k}{n}$ | np | $np(1-p)\frac{N-n}{N-1}$ |
| Binomial Negativa BN(n, p) | $\binom{n+x-1}{x} p^n(1-p)^x, \quad x = 0, 1, 2, ...$ | $\frac{n(1-p)}{p}$ | $\frac{n(1-p)}{p^2}$ |

| PRINCIPALES DISTRIBUCIONES CONTINUAS | | | |
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| **Distribución** | **Función de Densidad** | **Media** | **Varianza** |
| Uniforme Continua U[a, b] | $\frac{1}{b-a}, \quad a \le x \le b$ | $\frac{a+b}{2}$ | $\frac{(b-a)^2}{12}$ |
| Normal N(μ, σ) | $\frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}, \quad -\infty < x < +\infty$ | μ | $\sigma^2$ |
| Exponencial Exp(θ) | $\theta e^{-\theta x}, \quad x > 0$ | $\frac{1}{\theta}$ | $\frac{1}{\theta^2}$ |
| Weibull W(α,β) | $\frac{\alpha}{\beta^\alpha} x^{\alpha-1} e^{-\left(\frac{x}{\beta}\right)^\alpha} \quad x \ge 0, \ \alpha \ge 0, \text{y } \beta \ge 0$ | $\beta\,\Gamma\left(1+\frac{1}{\alpha}\right)$ | $\beta^2\left(\Gamma\left(1+\frac{2}{\alpha}\right)-\left(\Gamma\left(1+\frac{1}{\alpha}\right)\right)^2\right)$ |
| Gamma Γ(a, p) | $\frac{a^p}{\Gamma(p)} e^{-ax} x^{p-1}, \quad x > 0, \ a \text{ y } p > 0$ | $\frac{p}{a}$ | $\frac{p}{a^2}$ |
| Beta β(p, q) | $\frac{1}{\beta(p,q)} x^{p-1}(1-x)^{q-1}, \quad 0 \le x \le 1, \ p,q > 0$ | $\frac{p}{p+q}$ | $\frac{pq}{(p+q+1)(p+q)^2}$ |
| Chi-Cuadrado $\chi^2_n$ | $\frac{1}{2^{\frac{n}{2}}\Gamma(\frac{n}{2})} e^{-\frac{x}{2}} x^{\frac{n}{2}-1}, \quad x > 0$ | n | 2n |
| t de Student $t_n$ | $\frac{1}{\sqrt{n\pi}} \frac{\Gamma\left(\frac{n+1}{2}\right)}{\Gamma\left(\frac{n}{2}\right)} \left(1+\frac{t^2}{n}\right)^{-\frac{n+1}{2}}, \quad -\infty < t < +\infty$ | 0 | $\frac{n}{n-2}$ |

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| F de Fisher-Snedecor $F_{n,\,m}$ | $\dfrac{\Gamma\left(\dfrac{n+m}{2}\right)\left(\dfrac{n}{m}\right)^{\frac{n}{2}}}{\Gamma\left(\dfrac{n}{2}\right)\Gamma\left(\dfrac{m}{2}\right)} \dfrac{x^{\frac{n}{2}-1}}{\left(1+\dfrac{n}{m}x\right)^{\frac{n+m}{2}}}, \quad x > 0$ | $\dfrac{m}{m-2}$ | $\dfrac{2m^2(n+m-2)}{n(m-2)^2(m-4)}$ |