Probability mass functions

Name	Formula	Parameter	Mean	Variance
Poisson	$p(x)=\frac{\lambda^x e^{-\lambda}}{x!}, x=0,1,2,\cdots$	$\lambda>0$	$\mu=\lambda$	$\sigma^2=\lambda$
Binomial	$p(x)=\binom{n}{x}\mathrm{p}^x(1-\mathrm{p})^{n-x}, x=0,1,2,\cdots,n$	$0\le \mathrm{p}\le 1$ $n=1,2,3,\cdots$	$\mu=n\mathrm{p}$	$\sigma^2=n\mathrm{p}(1-\mathrm{p})$
Geometric	$p(x)=(1-\mathrm{p})^{x-1}\mathrm{p}, x=1,2,3\cdots$	$0\le \mathrm{p}\le 1$	$\mu=\frac{1\text{-}\mathrm{p}}{\mathrm{p}}$	$\sigma^2=\frac{1-\mathrm{p}}{\mathrm{p}^2}$

Probability density functions

Name	Formula	Parameter	Mean	Variance
Normal Or Gaussian	$f(x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{1}{2}\left(\frac{x-m}{\sigma}\right)^2}$ $-\infty < x < \infty$	m real $\sigma > 0$	$\mu = m$	$\sigma^2 = \sigma^2$
exponential	$f(x) = \lambda e^{-\lambda x}, x \geq 0$	$\lambda > 0$	$\mu = \frac{1}{\lambda}$	$\sigma^2 = \frac{1}{\lambda^2}$
Uniform	$f(x) = \frac{1}{b-a}$ $a < x < b$	a real $b > a$	$\mu = \frac{a+b}{2}$	$\sigma^2 = \frac{(b-a)^2}{12}$
Gamma	$f(x) = \frac{\lambda}{\Gamma(a)} (\lambda x)^{a-1} e^{-\lambda x}, x > 0$	$\lambda > 0$ $a > 0$	$\mu = \frac{a}{\lambda}$	$\sigma^2 = \frac{a}{\lambda^2}$