Name	Range	$P(X=i) \text{ or } F_X(x)$	f_X	E(X)	σ_X	MGF
Indicator $1(p)$	{0,1}	P(X=1) = p		p	\sqrt{pq}	$1 - p + pe^t$
Binomial $Bin(n, p)$	$\{0,1,,n\}$	$\binom{n}{i}p^i(1-p)^{n-i}$		np	$\sqrt{np(1-p)}$	$(1 - p + pe^t)^n$
Poisson $Pois(\lambda)$	{0,1,}	$\frac{\lambda^i}{i!}e^{-\lambda}$		λ	$\sqrt{\lambda}$	$e^{\lambda(e^t-1)}$
Geometric $Geo(p)$	{1,2,}	$= (1-p)^{i-1}p$		$\frac{1}{p}$	$\frac{\sqrt{1-p}}{p}$	$\frac{pe^t}{1 - (1 - p)e^t}, e^t < \frac{1}{1 - p}$
Uniform $U(a,b)$	(a,b)	$\frac{x-a}{b-a}$	$\frac{1}{b-a}$	$\frac{a+b}{2}$	$\frac{b-a}{2\sqrt{3}}$	$\frac{e^{tb} - e^{ta}}{t(b-a)}$
Exponential $Exp(\lambda)$	${f R}^+$	$1 - e^{-\lambda x}$	$\lambda e^{-\lambda x}$	$\frac{1}{\lambda}$	$\frac{1}{\lambda}$	$(1-t\lambda^{-1})^{-1}, t < \lambda$
Normal $N(\mu, \sigma^2)$	\mathbf{R}	$\Phi(\frac{x-\mu}{\sigma})$	$\frac{1}{\sigma\sqrt{2\pi}}e^{-\frac{(x-\mu)^2}{2\sigma^2}}$	μ	σ	$e^{t\mu + \frac{1}{2}\sigma^2 t^2}$
Multivariate Normal $N_n(\boldsymbol{\mu}, \boldsymbol{\Sigma})$	\mathbf{R}^n	$f_{oldsymbol{X}}(oldsymbol{x}) = rac{1}{(2\pi)^{rac{n}{2}} \det(oldsymbol{\Sigma})^{rac{1}{2}}} e^{-rac{1}{2}(oldsymbol{x} - oldsymbol{\mu})^T oldsymbol{\Sigma}^{-1}(oldsymbol{x} - oldsymbol{\mu})}$		μ	Covariance matrix Σ	

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Geometric $Geo(p)$	{1,2,}	$= (1-p)^{i-1}p$		$\frac{1}{p}$	$\frac{\sqrt{1-p}}{p}$	$\frac{pe^t}{1-(1-p)e^t}, e^t < \frac{1}{1-p}$
Uniform $U(a,b)$	(a,b)	$\frac{x-a}{b-a}$	$\frac{1}{b-a}$	$\frac{a+b}{2}$	$\frac{b-a}{2\sqrt{3}}$	$\frac{e^{tb} - e^{ta}}{t(b-a)}$
Exponential $Exp(\lambda)$	\mathbf{R}^{+}	$1 - e^{-\lambda x}$	$\lambda e^{-\lambda x}$	$\frac{1}{\lambda}$	$\frac{1}{\lambda}$	$(1 - t\lambda^{-1})^{-1}, t < \lambda$
Normal $N(\mu, \sigma^2)$	\mathbf{R}	$\Phi(\frac{x-\mu}{\sigma})$	$\frac{1}{\sigma\sqrt{2\pi}}e^{-\frac{(x-\mu)^2}{2\sigma^2}}$	μ	σ	$e^{t\mu + \frac{1}{2}\sigma^2 t^2}$
Multivariate Normal $N_n(\boldsymbol{\mu}, \boldsymbol{\Sigma})$	${f R}^n$	$f_{oldsymbol{X}}(oldsymbol{x}) = rac{1}{(2\pi)^{rac{n}{2}} \det(oldsymbol{\Sigma})^{rac{1}{2}}} e^{-rac{1}{2}(oldsymbol{x} - oldsymbol{\mu})^T oldsymbol{\Sigma}^{-1}(oldsymbol{x} - oldsymbol{\mu})}$		μ	Covariance matrix Σ	

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Uniform $U(a,b)$	(a,b)	$\frac{x-a}{b-a}$	$\frac{1}{b-a}$	$\frac{a+b}{2}$	$\frac{b-a}{2\sqrt{3}}$	$\frac{e^{tb} - e^{ta}}{t(b-a)}$
Exponential $Exp(\lambda)$	${f R}^+$	$1 - e^{-\lambda x}$	$\lambda e^{-\lambda x}$	$\frac{1}{\lambda}$	$\frac{1}{\lambda}$	$(1 - t\lambda^{-1})^{-1}, t < \lambda$
Normal $N(\mu, \sigma^2)$	R	$\Phi(\frac{x-\mu}{\sigma})$	$\frac{1}{\sigma\sqrt{2\pi}}e^{-\frac{(x-\mu)^2}{2\sigma^2}}$	μ	σ	$e^{t\mu + \frac{1}{2}\sigma^2 t^2}$
Multivariate Normal $N_n(\boldsymbol{\mu}, \boldsymbol{\Sigma})$	\mathbf{R}^n	$f_{oldsymbol{X}}(oldsymbol{x}) = rac{1}{(2\pi)^{rac{n}{2}} det(oldsymbol{\Sigma})^{rac{1}{2}}} e^{-rac{1}{2}(oldsymbol{x} - oldsymbol{\mu})^T oldsymbol{\Sigma}^{-1}(oldsymbol{x} - oldsymbol{\mu})}$		μ	Covariance matrix Σ	