

EXPECTATIONS AND VARIANCES OF STANDARD DISTRIBUTIONS

	Parameters	EXPECTATION	VARIANCE
Discrete Distributions			
<i>Bernoulli</i> (θ)	θ	θ	$\theta(1 - \theta)$
<i>Binomial</i> (n, θ)	n, θ	$n\theta$	$n\theta(1 - \theta)$
<i>Poisson</i> (λ)	λ	λ	λ
<i>Geometric</i> (θ)	θ	$\frac{1}{\theta}$	$\frac{(1 - \theta)}{\theta^2}$
<i>NegBinomial</i> (n, θ)	n, θ	$\frac{n}{\theta}$	$\frac{n(1 - \theta)}{\theta^2}$
 Continuous Distributions			
<i>Uniform</i> (a, b)	a, b	$\frac{a + b}{2}$	$\frac{(b - a)^2}{12}$
<i>Exponential</i> (λ)	λ	$\frac{1}{\lambda}$	$\frac{1}{\lambda^2}$
<i>Gamma</i> (α, β)	α, β	$\frac{\alpha}{\beta}$	$\frac{\alpha}{\beta^2}$
<i>Normal</i> (μ, σ^2)	μ, σ^2	μ	σ^2

MOMENT GENERATING FUNCTIONS OF STANDARD DISTRIBUTIONS

	Parameters	MGF
Discrete Distributions		
<i>Bernoulli</i> (θ)	θ	$1 - \theta + \theta e^t$
<i>Binomial</i> (n, θ)	n, θ	$(1 - \theta + \theta e^t)^n$
<i>Poisson</i> (λ)	λ	$\exp \{ \lambda (e^t - 1) \}$
<i>Geometric</i> (θ)	θ	$\frac{\theta e^t}{1 - e^t(1 - \theta)}$
<i>NegBinomial</i> (n, θ)	n, θ	$\left\{ \frac{\theta e^t}{1 - e^t(1 - \theta)} \right\}^n$
 Continuous Distributions		
<i>Exponential</i> (λ)	λ	$\frac{\lambda}{\lambda - t}$
<i>Gamma</i> (α, β)	α, β	$\left(\frac{\beta}{\beta - t} \right)^\alpha$
<i>Normal</i> (μ, σ^2)	μ, σ^2	$\exp \left\{ \mu t + \frac{\sigma^2 t^2}{2} \right\}$

See stats.ma.ic.ac.uk/~das01/M1S/2001/Handouts/Mgfcals.ps for full calculation details