DISCRETE DISTRIBUTIONS

	$\mathcal{Y}$	PARAMETERS	$p(y)$	$F(y)$	$\mathbb{E}[Y]$	$\mathbb{V}[Y]$	$m(t)$
$Bernoulli(p)$	$\{0,1\}$	$p \in (0,1)$	$p^y(1-p)^{1-y}$		p	$p(1-p)$	$1-p+pe^t$
$Binomial(n,p)$	$\{0,1,...,n\}$	$n \in \mathbb{Z}^+, p \in (0,1)$	$\binom{n}{y} p^y(1-p)^{n-y}$		np	$np(1-p)$	$(1-p+pe^t)^n$
$Poisson(\lambda)$	$\{0,1,2,...\}$	$\lambda \in \mathbb{R}^+$	$\frac{e^{-\lambda}\lambda^y}{y!}$		λ	λ	$\exp\{\lambda(e^t-1)\}$
$Geometric(p)$	$\{1,2,...\}$	$p \in (0,1)$	$(1-p)^{y-1}p$	$1-(1-p)^y$	$\frac{1}{p}$	$\frac{(1-p)}{p^2}$	$\frac{pe^t}{1-e^t(1-p)}$
$NegBinomial(r,p)$	$\{r,r+1,...\}$	$r \in \mathbb{Z}^+, p \in (0,1)$	$\binom{y-1}{r-1} p^r(1-p)^{y-r}$		$\frac{r}{p}$	$\frac{r(1-p)}{p^2}$	$\left(\frac{pe^t}{1-e^t(1-p)}\right)^r$
or	$\{0,1,2,...\}$	$r \in \mathbb{Z}^+, p \in (0,1)$	$\binom{r+y-1}{r-1} p^r(1-p)^y$		$\frac{r(1-p)}{p}$	$\frac{r(1-p)}{p^2}$	$\left(\frac{p}{1-e^t(1-p)}\right)^r$
$Hypergeom(N,r,n)$	$\{\max\{0,n-N+r\},\ldots$ $\ldots,\min\{n,r\}\}$	$N \geq r,n$	$\frac{\binom{r}{y}\binom{N-r}{n-y}}{\binom{N}{n}}$		$n\left(\frac{r}{N}\right)$	$n\left(\frac{r}{N}\right)\left(1-\frac{r}{N}\right)\left(\frac{N-n}{N-1}\right)$	
or			$\frac{\binom{n}{y}\binom{N-n}{r-y}}{\binom{N}{r}}$				

CONTINUOUS DISTRIBUTIONS							
	$\mathcal{Y}$	PARAMETERS	$p(y)$	$F(y)$	$\mathbb{E}[Y]$	$\mathbb{V}[Y]$	$m(t)$
$Uniform(\theta_1, \theta_2)$ (standard model $\theta_1 = 0, \theta_2 = 1$)	(θ_1, θ_2)	$\theta_1 < \theta_2 \in \mathbb{R}$	$\dfrac{1}{\theta_2 - \theta_1}$	$\dfrac{y - \theta_1}{\theta_2 - \theta_1}$	$\dfrac{(\theta_1 + \theta_2)}{2}$	$\dfrac{(\theta_2 - \theta_1)^2}{12}$	$\dfrac{e^{\theta_2 t} - e^{\theta_1 t}}{t(\theta_2 - \theta_1)}$
$Exponential(\beta)$ (standard model $\beta = 1$)	$\mathbb{R}^+$	$\beta \in \mathbb{R}^+$	$\dfrac{1}{\beta} e^{-y/\beta}$	$1 - e^{-y/\beta}$	β	β^2	$\left(\dfrac{1}{1 - \beta t}\right)$
$Gamma(\alpha, \beta)$ (standard model $\beta = 1$)	$\mathbb{R}^+$	$\alpha, \beta \in \mathbb{R}^+$	$\dfrac{1}{\beta^\alpha \Gamma(\alpha)} y^{\alpha-1} e^{-y/\beta}$ where $\Gamma(\alpha) = \int_0^\infty y^{\alpha-1} e^{-y}\, dy$		$\alpha\beta$	$\alpha\beta^2$	$\left(\dfrac{1}{1 - \beta t}\right)^\alpha$
$Normal(\mu, \sigma^2)$ (standard model $\mu = 0, \sigma = 1$)	$\mathbb{R}$	$\mu \in \mathbb{R}, \sigma \in \mathbb{R}^+$	$\dfrac{1}{\sqrt{2\pi\sigma^2}} \exp\left\{-\dfrac{(y-\mu)^2}{2\sigma^2}\right\}$		μ	σ^2	$\exp\left\{\mu t + \dfrac{\sigma^2 t^2}{2}\right\}$
$Beta(\alpha, \beta)$	$(0, 1)$	$\alpha, \beta \in \mathbb{R}^+$	$\dfrac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)} y^{\alpha-1}(1-y)^{\beta-1}$		$\dfrac{\alpha}{\alpha+\beta}$	$\dfrac{\alpha\beta}{(\alpha+\beta)^2(\alpha+\beta+1)}$	
$Weibull(\alpha, \beta)$ (standard model $\beta = 1$)	$\mathbb{R}^+$	$\alpha, \beta \in \mathbb{R}^+$	$\alpha\beta y^{\alpha-1} e^{-\beta y^\alpha}$	$1 - e^{-\beta y^\alpha}$	$\dfrac{\Gamma(1 + 1/\alpha)}{\beta^{1/\alpha}}$	$\dfrac{\Gamma(1 + 2/\alpha) - \Gamma(1 + 1/\alpha)^2}{\beta^{2/\alpha}}$	
$Student(\nu)$	$\mathbb{R}$	$\nu \in \mathbb{R}^+$	$\dfrac{\Gamma((\nu+1)/2)}{\Gamma(\nu/2)\sqrt{\pi\nu}\{1 + y^2/\nu\}^{(\nu+1)/2}}$		0 (if $\nu > 1$)	$\dfrac{\nu}{\nu - 2}$ (if $\nu > 2$)	
$Pareto(\theta, \alpha)$	$\mathbb{R}^+$	$\theta, \alpha \in \mathbb{R}^+$	$\dfrac{\alpha\theta^\alpha}{(\theta + y)^{\alpha+1}}$	$1 - \left(\dfrac{\theta}{\theta + y}\right)^\alpha$	$\dfrac{\theta}{\alpha - 1}$ (if $\alpha > 1$)	$\dfrac{\alpha\theta^2}{(\alpha-1)(\alpha-2)}$ (if $\alpha > 2$)	

For linear transformation $X = \mu + \sigma Y$

$$p_X(x) = p_Y\left(\frac{x-\mu}{\sigma}\right)\frac{1}{\sigma} \qquad F_X(x) = F_Y\left(\frac{x-\mu}{\sigma}\right) \qquad m_X(t) = e^{\mu t} m_Y(\sigma t) \qquad \mathbb{E}[X] = \mu + \sigma\mathbb{E}[Y] \qquad \mathbb{V}[X] = \sigma^2\mathbb{V}[Y]$$