Distribution	Notation	$supp(X)$	Θ	p.f.	$E(X)$	$Var(X)$	m.g.f.
Bernoulli	$Ber(\theta)$	$\{0,1\}$	$[0,1]$	$\theta^x(1-\theta)^{1-x}$	θ	$\theta(1-\theta)$	$(1-p)+pe^t$.
Binomial	$Bin(n,p)$	$\{0,1,\ldots,n\}$	$\mathbb{N}\times[0,1]$	$\binom{n}{x}\theta^x(1-\theta)^{n-x}$	$n\theta$	$n\theta(1-\theta)$	$[(1-p)+pe^t]^n$.
Discrete Uniform	$DU(n)$	$\{1,2,\ldots,n\}$	$\mathbb{N}$	$\frac{1}{n}$	$\frac{n+1}{2}$	$\frac{(n+1)(n-1)}{12}$	$\frac{1}{n}\sum_{i=1}^n e^{it}$.
Geometric	$Geom(\theta)$	$1,2,\ldots$	$[0,1]$	$\theta(1-\theta)^{x-1}$	$\frac{1}{\theta}$	$\frac{1-\theta}{\theta}$	$\frac{\theta e^t}{1-(1-\theta)e^t}$, $t<-\log(1-\theta)$.
		$0,1,\ldots$		$\theta(1-\theta)^x$	$\frac{1-\theta}{\theta}$	$\frac{1-\theta}{\theta^2}$	$\frac{\theta}{1-(1-\theta)e^t}$.
Hypergeometric	$HGeom(n,m,k)$	$\{0,1,\ldots,k\}$	$[0,\infty)^3$	$\frac{\binom{m}{x}\binom{n-m}{k-x}}{\binom{n}{k}}$	$\frac{km}{n}$	$\frac{km}{n}\frac{(n-m)(n-k)}{n(n-1)}$	too ugly
		$m-(n-k)\le x\le m$.					
Negative Binomial	$NegBin(r,\theta)$	$0,1,\ldots$	$(0,\infty)\times[0,1]$	$\binom{r+x-1}{x}\theta^r(1-\theta)^x$	$\frac{r(1-\theta)}{\theta}$	$\frac{r(1-\ theta)}{\theta}$	$\left(\frac{\theta}{1-(1-\theta)e^t}\right)^r$, $t<-\log(1-\theta)$.
Poisson	$Poisson(\theta)$	$0,1,\ldots$	$[0,\infty)$	$\frac{e^{-\theta}\theta^x}{x!}$	θ	θ	$e^{\theta(e^t-1)}$.

Table 1: Discrete distributions

Distribution	Notation	$supp(X)$	Θ	p.d.f.	$E(X)$	$Var(X)$	m.g.f.
Normal	$N(\mu,\sigma^2)$	$\mathbb{R}$	$\mathbb{R}\times(0,\infty)$	$\frac{1}{\sqrt{2\pi\sigma^2}}e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$	μ	σ^2	$e^{\mu t+\sigma^2t^2/2}$.
Uniform	$U(a,b)$	$[a,b]$	$\mathbb{R}^2$	$\frac{1}{b-a}$	$\frac{b+a}{2}$	$\frac{(b-a)^2}{12}$	$\frac{e^{bt}-e^{at}}{(b-a)t}$,
			$a<b$.				
Beta	$Beta(a,b)$	$[0,1]$	$(0,\infty)^2$	$\frac{\Gamma(a+b)}{\Gamma(a)\Gamma(b)}x^{a-1}(1-x)^{b-1}$	$\frac{a}{a+b}$	$\frac{ab}{(a+b)^2(a+b+1)}$	$1+\sum_{k=1}^{\infty}\left(\prod_{r=0}^{k-1}\frac{a+r}{a+b+r}\right)\frac{t^k}{k!}$.
Exponential	$exp(\theta)$	$[0,\infty)$	$(0,\infty)$	$\theta e^{-\theta x}$	$\frac{1}{\theta}$	$\frac{1}{\theta^2}$	$\frac{\theta}{\theta-t}$,
							$t<\theta$.
				$\frac{1}{\theta}e^{-\frac{x}{\theta}}$	θ	θ^2	$\frac{1}{1-\theta t}$,
							$t<\frac{1}{\theta}$.
Gamma	$Gamma(a,\theta)$	$(0,\infty)$	$(0,\infty)^2$	$\frac{\theta^a}{\Gamma(a)}x^{a-1}e^{-\theta x}$	$\frac{a}{\theta}$	$\frac{a}{\theta^2}$	$\left(\frac{\theta}{\theta-t}\right)^a$,
							$t<\theta$.
				$\frac{1}{\Gamma(a)\theta^a}x^{a-1}e^{-\frac{x}{\theta}}$	$a\theta$	$a\theta^2$	$\left(\frac{1}{1-\theta t}\right)^a$,
							$t<\frac{1}{\theta}$.
Inverse Gamma	$IG(a,b)$	$(0,\infty)$	$(0,\infty)^2$	$\frac{b^a}{\Gamma(a)}\left(\frac{1}{x}\right)^{a+1}e^{-\frac{b}{x}}$	$\frac{b}{a-1}$	$\frac{b^2}{(a-1)^2(a-2)}$	does not exist,
					$a>1$	$a>2$.	
				$\frac{1}{\Gamma(a)b^a}x^{a-1}e^{-\frac{x}{b}}$	ab	ab^2	$\left(\frac{1}{1-bt}\right)^a$,
							$t<\frac{1}{b}$.
Pareto	$Pareto(a,b)$	(a,∞)	$(0,\infty)^2$	$\frac{ba^b}{x^{b+1}}$	$\frac{ab}{b-1}$	$\frac{a^b}{(b-1)^2(b-2)}$	does not exist.
t-Student	t_ν	$\mathbb{R}$	$1,2,\ldots$	$\frac{\Gamma\left(\frac{\nu+1}{2}\right)}{\Gamma\left(\frac{\nu}{2}\right)}\frac{1}{\sqrt{\nu\pi}}\left(1+\frac{x^2}{\nu}\right)^{-\frac{(\nu+1)}{2}}$	0	$\frac{\nu}{\nu-2}$	does not exist,
					$\nu>1$	$\nu>2$.	
Chi squared	χ^2_ν	$[0,\infty)$	$1,2,\ldots$	$\frac{1}{\Gamma(\nu/2)2^{\nu/2}}x^{\nu/2-1}e^{-x/2}$	ν	2ν	$\left(\frac{1}{1-2t}\right)^{p/2}$,
							$t<1/2$.
Cauchy	$Cauchy(\theta,\sigma)$	$\mathbb{R}$	$\mathbb{R}\times(0,\infty)$	$\frac{1}{\pi\sigma}\frac{1}{1+\left(\frac{x-\theta}{\sigma}\right)^2}$	does not exist	does not exist	does not exist.

Table 2: Continuous distributions