# SC_MD_Assignment_423

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## Question:

Write not less than 5 probability distributions, along with the functions in R needed to calculate the density function, cumulative distribution function, inverse cumulative distribution function and random number generator. For each function used, mention explicitly the basic arguments needed. Present the output in a tabular form using stargazer. Convert it into a pdf file and return it in the teams.

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## Answer:

The task is to create the following table in `stargazer`:

| SI. No. | Distribution Function | Density Function | Cumulative Distribution Function | Inverse Cumulative Distribution Function | Random Number Generator |
|---|---|---|---|---|---|
| 01 | Hypergeometric Distribution | $dhyper(x, m, n, k)$ | $phyper(q, m, n, k)$ | $qhyper(p, m, n, k)$ | $rhyper(nn, m, n, k)$ |
| 02 | Binomial Distribution | $dbinom(x, size, prob)$ | $pbinom(q, size, prob)$ | $qbinom(p, size, prob)$ | $rbinom(n, size, prob)$ |
| 03 | Poisson Distribution | $dpois(x, lambda)$ | $ppois(q, lambda)$ | $qpois(p, lambda)$ | $rpois(n, lambda)$ |
| 04 | Negative Binomial Distribution | $dnbinom(x, size, prob, mu)$ | $pnbinom(q, size, prob, mu)$ | $qnbinom(p, size, prob, mu)$ | $rnbinom(n, size, prob, mu)$ |
| 05 | Geometric Distribution | $dgeom(x, prob)$ | $pgeom(q, prob)$ | $qgeom(p, prob)$ | $rgeom(n, prob)$ |
| 06 | Gamma Distribution | $dgamma(x, shape, rate, scale = 1/rate)$ | $pgamma(q, shape, rate, scale = 1/rate)$ | $qgamma(p, shape, rate, scale = 1/rate)$ | $rgamma(n, shape, rate, scale = 1/rate)$ |
| 07 | Uniform Distribution | $dunif(x, min, max)$ | $punif(q, min, max)$ | $qunif(p, min, max)$ | $runif(n, min, max)$ |
| 08 | Normal Distribution | $dnorm(x, mean, sd)$ | $pnorm(q, mean, sd)$ | $qnorm(p, mean, sd)$ | $rnorm(n, mean, sd)$ |
| 09 | Beta Distribution | $dbeta(x, shape1, shape2)$ | $pbeta(q, shape1, shape2)$ | $qbeta(p, shape1, shape2)$ | $rbeta(n, shape1, shape2)$ |

| SI. No. | Distribution Function | Density Function | Cumulative Distribution Function | Inverse Cumulative Distribution Function | Random Number Generator |
|---|---|---|---|---|---|
| 10 | Cauchy Distribution | $dcauchy(x, location, scale)$ | $pcauchy(q, location, scale)$ | $qcauchy(p, location, scale)$ | $rcauchy(n, location, scale)$ |
| 11 | LogNormal Distribution | $dlnorm(x, meanlog, sdlog)$ | $plnorm(q, meanlog, sdlog)$ | $qlnorm(p, meanlog, sdlog)$ | $rlnorm(n, meanlog, sdlog)$ |
| 12 | Exponential Distribution | $dexp(x, rate)$ | $pexp(q, rate)$ | $qexp(p, rate)$ | $rexp(n, rate)$ |

```
library(stargazer)
```

```
##
## Please cite as:
##  Hlavac, Marek (2022). stargazer: Well-Formatted Regression and Summary Statistics Tables.
##  R package version 5.2.3. https://CRAN.R-project.org/package=stargazer
```

```
dd1 = c("Hypergeometric Distribution", "dhyper(x, m, n, k)", "phyper(q, m, n, k)", "qhyper(p, m, n, k)"

dd2 = c("Binomial Distribution", "dbinom(x, size, prob)", "pbinom(q, size, prob)", "qbinom(p, size, prob

dd3 = c("Poisson Distribution", "dpois(x, lambda)", "ppois(q, lambda)", "qpois(p, lambda)", "rpois(n, la

dd4 = c("Negative Binomial Distribution", "dnbinom(x, size, prob, mu)", "pnbinom(q, size, prob, mu)", "q

dd5 = c("Geometric Distribution", "dgeom(x, prob)", "pgeom(q, prob)", "qgeom(p, prob)", "rgeom(n, prob)

cd1 = c("Gamma Distribution", "dgamma(x, shape, rate, scale = 1/rate)", "pgamma(q, shape, rate, scale =


cd2 = c("Uniform Distribution", "dunif(x, min, max)", "punif(q, min, max)", "qunif(p, min, max)", "runi

cd3 = c("Normal Distribution", "dnorm(x, mean, sd)", "pnorm(q, mean, sd)", "qnorm(p, mean, sd)", "rnorm

cd4 = c("Beta Distribution", "dbeta(x, shape1, shape2)", "pbeta(q, shape1, shape2)", "qbeta(p, shape1, s

cd5 = c("Cauchy Distribution", "dcauchy(x, location, scale)", "pcauchy(q, location, scale)", "qcauchy(p

cd6 = c("LogNormal Distribution", "dlnorm(x, meanlog, sdlog)", "plnorm(q, meanlog, sdlog)", "qlnorm(p, m

cd7 = c("Exponential Distribution", "dexp(x, rate)", "pexp(q, rate)", "qexp(p, rate)", "rexp(n, rate)")
```

```
tab = as.data.frame(rbind("01" = dd1, "02" = dd2, "03" = dd3, "04" = dd4, "05" = dd5, "06" = cd1, "07" =
colnames(tab) <- (c("Distribution Functions", "Density Function", "Cumulative Distribution Function", "I
```

```
stargazer(tab, type = "text", covariate.labels = c("SI. No.", "Distribution Functions", "Density Functi
```

```
##
## Distribution Table
## ================================================================================================
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| SI. No. | Distribution Functions | Density Function | Cumulative Distribu |
|---|---|---|---|
| 01 | Hypergeometric Distribution | dhyper(x, m, n, k) | phyper(q, m, |
| 02 | Binomial Distribution | dbinom(x, size, prob) | pbinom(q, size |
| 03 | Poisson Distribution | dpois(x, lambda) | ppois(q, lar |
| 04 | Negative Binomial Distribution | dnbinom(x, size, prob, mu) | pnbinom(q, size, |
| 05 | Geometric Distribution | dgeom(x, prob) | pgeom(q, pr |
| 06 | Gamma Distribution | dgamma(x, shape, rate, scale = 1/rate) | pgamma(q, shape, rate, |
| 07 | Uniform Distribution | dunif(x, min, max) | punif(q, min |
| 08 | Normal Distribution | dnorm(x, mean, sd) | pnorm(q, mear |
| 09 | Beta Distribution | dbeta(x, shape1, shape2) | pbeta(q, shape1 |
| 10 | Cauchy Distribution | dcauchy(x, location, scale) | pcauchy(q, locatio |
| 11 | LogNormal Distribution | dlnorm(x, meanlog, sdlog) | plnorm(q, meanlog |
| 12 | Exponential Distribution | dexp(x, rate) | pexp(q, rat |