Permutaciones: $P_n = n!$

Permutaciones completas:

$$PC_n = n! \sum_{k=0}^{n} \frac{(-1)^k}{k!}$$

Permutaciones con repetición:

$$P_n^{n_1,\ldots,n_r} = \frac{n!}{n_1! \cdots n_r!}$$

M-variaciones con repetición:

$$VR_n^m = n^m$$

M-variaciones sin repetición:

$$V_n^m = \frac{n!}{(n-m)!}$$

Combinaciones:

$$C_k^n = \binom{n}{k} = \frac{n!}{n!\,(n-k)!}$$

Combinaciones con repetición:

$$CR_r^n = \binom{n+r-1}{n}$$

```
result = integrate2_dydx(
 f,
 from_x = ,
 to_x = ,
 from_y = ,
 to_y = )
```

```
c(x, y, z)

names(x) =value

data.frame(x = y, z = w)

read.csv(file)

write.csv(x, file, row.names = FALSE)

colnames(x) = value

print(x)

names(x)

plot(x, y, type = , xlab = , ylab = , main = , ylim = )

table(x)

substr(x, start = , stop = )

replicate(N, expr)

sample(x:y, size = , replace = )

apply(x, MARGIN = , FUN = )

sapply(x, FUN = )
```

choose(n, k)

dbinom(x, size = , prob =)

pbinom(q, size = , prob =)

rbinom(n, size = , prob =)

qbinom(p, size = , prob =)

dpois(x, lambda =)

ppois(q, lambda =)

rpois(n, lambda =)

qpois(p, lambda =)

dgeom(x, prob =)

pgeom(q, prob =)

rgeom(n, prob =)

qgeom(p, prob =)

dhyper(x, m = , n = , k =)

phyper(q, m = , n = , k =)

rhyper(nn, m = , n = , k =)

qhyper(p, m = , n = , k =)

dnbinom(x, size = , prob =)

pnbinom(q, size = , prob =)

rnbinom(n, size = , prob =)

qnbinom(p, size = , prob =)

dnorm(x, mean = , sd =)

pnorm(q, mean = , sd =)

rnorm(n, mean = , sd =)

qnorm(p, mean = , sd =)

dunif(x, min = , max =)

punif(q, min = , max =)

runif(n, min = , max =)

qunif(p, min = , max =)

dexp(x, rate =)

pexp(q, rate =)

rexp(n, rate =)

qexp(p, rate =)

mean(x, trim = , na.rm =)

sum(x)

length(x)

sample(x, size = , replace =)

replicate(n, expr)

table(x)

outer(x, y, FUN =)

```
dbinom(y, x, p)

rpois(n, lambda)

rbinom(n, size, prob)

plot(x, y, type = "")

replicate(n, expr)

which.max(x)

sum(x * y)

Vectorize(f)


pbinom(q, size, prob)

round(x, digits)

integrate(f, lower, upper)

integrate2_dydx(f, from_x, to_x, from_y, to_y)

exp(x)

which.max(x)


sample(x, size, replace = , prob = )

replicate(N, expr)

sum(x)


cbind(x, y, ... )
```

```
paste0(x, ...)


plot( x , y ,
    xlab = ,
    ylab = ,
    main = ,
    pch = ,
    col = ,
    type = ,
    lwd =
    )
```