R PROGRAMA: PROBABILITATE BANAKUNTZAK

1 Banakuntza binomiala

$$B(n,p)\begin{cases} \bullet\ P[X=a]: \texttt{dbinom(a,n,p)} \\ \bullet\ P[X\leq b]: \texttt{pbinom(b,n,p)} \\ \bullet\ P[X>c]: \begin{cases} \texttt{pbinom(c,n,p,lower.tail = FALSE)};\ edo \\ \texttt{1 - pbinom(c,n,p)} \end{cases} \end{cases}$$

Adibideak:

• `dbinom(0:4,4,0.2)` aginduak $B(n=4,p=0.2)$ batean 0, 1, 2, 3 eta 4 gertatzeko probabilitateak ematen ditu.
• `pbinom(2,4,seq(0.1,0.9,by=0.1))` aginduak $B(n=4,p)$ batean 2 gertatzeko probabilitateak ematen ditu $p=0.1,0.2,\ldots,0.9$ balioetarako.

2 Poisson banakuntza

$$P(\lambda)\begin{cases} \bullet\ P[X=a]: \texttt{dpois(a,}\lambda\texttt{)} \\ \bullet\ P[X\leq b]: \texttt{ppois(a,}\lambda\texttt{)} \\ \bullet\ P[X>c]: \begin{cases} \texttt{ppois(c,}\lambda\texttt{,lower.tail = FALSE)};\ edo \\ \texttt{1 - ppois(c,}\lambda\texttt{)} \end{cases} \end{cases}$$

3 Banakuntza normala

$$N(0,1)\begin{cases} \bullet\ P[Z<a]: \texttt{pnorm(a)} \\ \bullet\ P[Z>b]: \begin{cases} \texttt{pnorm(b,lower.tail = FALSE)};\ edo \\ \texttt{1 - pnorm(b)} \end{cases} \\ \bullet\ P[Z<c]=p;\ c?: \texttt{qnorm(p)} \\ \bullet\ P[Z>c]=p;\ c?: \texttt{qnorm(p,lower.tail = FALSE)} \end{cases}$$

$$N(\mu,\sigma)\begin{cases} \bullet\ P[X<a]: \texttt{pnorm(a,mean =}\ \mu\texttt{,sd =}\ \sigma\texttt{)} \\ \bullet\ P[X>b]: \begin{cases} \texttt{pnorm(b,mean =}\ \mu\texttt{,sd =}\ \sigma\texttt{,lower.tail = FALSE)};\ edo \\ \texttt{1 - pnorm(b,mean =}\ \mu\texttt{,sd =}\ \sigma\texttt{)} \end{cases} \\ \bullet\ P[X<c]=p;\ c?: \texttt{qnorm(p,mean =}\ \mu\texttt{,sd =}\ \sigma\texttt{)} \\ \bullet\ P[Z>c]=p;\ c?: \texttt{qnorm(p,mean =}\ \mu\texttt{,sd =}\ \sigma\texttt{,lower.tail = FALSE)} \end{cases}$$

Adibideak:

• `pnorm(3,4,1,lower.tail=F)` aginduak $N(4,1)$ batean $P(X>3)$ ematen du.
• `qnorm(0.1,4,1)` aginduak $N(4,1)$ batean azpitik 0.1eko probabilitatea uzten duen balioa kalkulatzen du.

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