Matemática 3

Fórmulas para el primer parcial

$$f(x) = P(X=x) = \binom{n}{x}.p^x.(1-p)^{n-x} \qquad E(X) = n.p \qquad V(X) = n.p.(1-p)$$

$$f(x) = P(X=x) = \frac{e^{-\lambda}.\lambda^x}{x!} \qquad E(X) = \lambda \qquad V(X) = \lambda$$

$$f(x) = P(X=x) = \binom{x-1}{r-1}.p^r.(1-p)^{x-r} \qquad E(X) = \frac{r}{p} \qquad V(X) = \frac{r.(1-p)}{p^2}$$

$$f(x) = P(X=x) = p \;\; .(1-p)^{x-1} \qquad E(X) = \frac{1}{p} \qquad V(X) = \frac{(1-p)}{p^2}$$

$$f(x) = P(X=x) = \frac{\binom{M}{x}\binom{N-M}{n-x}}{\binom{N}{n}} \qquad E(X) = n.\frac{M}{N} \qquad V(X) = n.\frac{M}{N}.\left(1-\frac{M}{N}\right).\left(\frac{N-n}{N-1}\right)$$

$$f(x) = \begin{cases} \lambda.e^{-\lambda x} & si \quad x \geq 0 \\ 0 & c.c \end{cases} \qquad F(x) = \begin{cases} 1 - e^{-\lambda . x} & si\, x \geq 0 \\ 0 & c.c \end{cases} \qquad E(X) = \frac{1}{\lambda} \qquad V(X) = \frac{1}{\lambda^2}$$

$$f(x) = \begin{cases} \dfrac{1}{b-a} & si \quad a \leq x \leq b \\ 0 & c.c \end{cases} \qquad F(x) = \begin{cases} 0 & si\, x < a \\ \dfrac{x-a}{b-a} & si\, a \leq x \leq b \\ 1 & si\, x > b \end{cases} \qquad E\,(X) = \frac{a+b}{2} \qquad V(X) = \frac{(b-a)^2}{12}$$

Derivadas de funciones básicas:

- $(e^x)' = e^x$
- $(x^n)' = n.x^{n-1}$
- $(Constante)' = 0$
- $(ln(x))' = 1/x$

Reglas de derivación:

- $(f(x)+g(x))' = (f(x))' + (g(x))'$
- $(f(x).g(x))' = (f(x))', g(x) + f(x).(g(x))'$
- $\left(\frac{f(x)}{g(x)}\right)' = \frac{[\,(f(x))', g(x) - f(x).(g(x))'\,]}{(g(x))^2}$
- $(f(g(x))' = f'(g(x)).(g(x))'$

Integrales de funciones básicas:

- $\int_a^b x^n\,dx = \frac{x^{n+1}}{n+1}\Big|_a^b$
- $\int_a^b 1\,dx = x\Big|_a^b$