Física Estadistica
Parcial 1
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$$W_N\left(n_1\right) = \frac{N!}{n_1!\left(N-n_1\right)!}p^{n_1}q^{N-n_1}$$

$$(x+y)^n = \sum_{k=0}^{n}\binom{n}{k}x^k y^{n-k} \text{ Expansión Binomial}$$

$$\bar{u} = \sum_{i=0}^{N}\frac{p\left(u_i\right)u_i}{p(u_i)}$$

$$\overline{u+v} = \bar{u}+\bar{v}$$

$$\left\langle \Delta n_1^2\right\rangle = \left(n_1^2\right) - \left\langle n_1\right\rangle^2$$

$$\overline{\Delta u} = \sum_{u=0}^{N} P(u)\cdot(u-\overline{u})^2$$

$$\ln\left(N!\right) = N\ln(N) - N$$

$$\int_{-\infty}^{\infty} e^{-ax^2}dx = \sqrt{\frac{\pi}{a}}$$

$$\langle x\rangle = \int_{-\infty}^{\infty} xp(x)dx$$

$$S\left(\lambda U,\lambda V,\lambda N\right) = \lambda S\left(U,V,N\right)$$

$$\frac{\partial S}{\partial U} > 0$$

$$\left.\frac{\partial U}{\partial S}\right|_{s=0} = 0$$

$$T = \left(\frac{\partial U}{\partial S}\right)_{N,V}$$

$$P = -\left(\frac{\partial U}{\partial V}\right)_{S,N}$$

$$\mu = \left(\frac{\partial U}{\partial N}\right)_{S,V}$$

$$S\left(N,V,E\right) = Nk\ln\left[\frac{V}{h^3}\left(\frac{4\pi mE}{3N}\right)^{\frac{3}{2}}\right] + \frac{3}{2}Nk$$

$$C_v = \left(\frac{\partial E}{\partial T}\right)_{N,V}$$

$$C_p = \left(\frac{\partial\left(E+PV\right)}{\partial T}\right)_{N,P}$$

$$S\left(N,V,E\right)=Nk\ln\left[\frac{V}{h^3}\left(\frac{4\pi mE}{3N}\right)^{\frac{3}{2}}\right]+\frac{3}{2}Nk-k\ln\left(N!\right)$$

$$S\left(N,V,E\right)=Nk\ln\left[\frac{V}{Nh^3}\left(\frac{4\pi mE}{3N}\right)^{\frac{3}{2}}\right]+\frac{5}{2}Nk$$