ΤΥΠΟΙ - ΕΞΙΣΩΣΕΙΣ

Αν $A = \begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix}$ τότε $A^{-1} = \dfrac{1}{(a_{22}a_{11} - a_{12}a_{21})}\begin{pmatrix} a_{22} & -a_{12} \\ -a_{21} & a_{11} \end{pmatrix}$

Αν $ax^2 + bx + c = 0$ τότε $x_{1,2} = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

$$\mu = E(x) = \sum_x x\,P(x)$$

$$\sigma^2 = E(X-\mu)^2 = \sum_x (x-\mu)^2 P(x)$$

$$Cov(X,Y) = E[(X-\mu_X)(Y-\mu_Y)] = \sum_x \sum_y (x-\mu_x)(y-\mu_y)P(x,y)$$

$$\rho = Corr(X,Y) = \frac{Cov(X,Y)}{\sigma_X \sigma_Y}$$

$$P(X=k) = \frac{n!}{k!(n-k)!}p^k(1-p)^{n-k},\ \mu = np,\ \sigma^2 = np(1-p)$$

$$P(X=k) = \frac{e^{-\lambda}\lambda^k}{k!}$$

$f(x) = \dfrac{1}{\sqrt{2\pi\sigma}} e^{-(x-\mu)^2/2\sigma^2}$. Αν $X \approx N(\mu,\sigma^2)$ τότε $\dfrac{X-\mu}{\sigma} \approx N(0,1)$

$$\overline{X} = \frac{1}{n}\sum_{i=1}^{n} X_i$$

$$s^2 = \frac{1}{n-1}\sum_{i=1}^{n}\left(X_i - \overline{X}\right)^2$$

$$\overline{x} - z_{\alpha/2}\frac{\sigma}{\sqrt{n}} < \mu < \overline{x} + z_{\alpha/2}\frac{\sigma}{\sqrt{n}}$$

$$\overline{x} - t_{n-1,\alpha/2}\frac{s}{\sqrt{n}} < \mu < \overline{x} + t_{n-1,\alpha/2}\frac{s}{\sqrt{n}}$$

$$\hat{p} - z_{\alpha/2}\sqrt{\frac{\hat{p}(1-\hat{p})}{n}} < P < \hat{p} + z_{\alpha/2}\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

$$z = \frac{\overline{x} - \mu_0}{\frac{\sigma}{\sqrt{n}}} \approx N(0,1)$$

$$t = \frac{\overline{x} - \mu_0}{\frac{s}{\sqrt{n}}} \approx t_{n-1}$$