$$\left[\Phi\left(\frac{z}{\sqrt{n}} \right) \right]^n = \left(\frac{1}{2\pi} \int_{-\infty}^{z/\sqrt{n}} e^{-\frac{1}{2}x^2} \, dx \right)^n$$

$$\frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)} \int_0^1 x^{\alpha-1}(1-x)^{\beta-1}\,dx = \frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)} \cdot \frac{\Gamma(\alpha)\Gamma(\beta)}{\Gamma(\alpha+\beta)}$$

$$\sum_{k=0}^{n} \binom{n}{k} = 2^n \qquad \prod_{i=1}^{n} \left(\sum_{j=1}^{k_i} \frac{1}{j} \right)$$

$$\prod_{n=1}^{\infty} \left(1 + \frac{1}{n^2} \right) \neq \prod_{n=1}^{\infty} \left(1 + \frac{1}{n^3} \right)$$

$$\begin{vmatrix} 1 & x & x^2 & x^3 \\ 1 & y & y^2 & y^3 \\ 1 & z & z^2 & z^3 \\ 1 & w & w^2 & w^3 \end{vmatrix} = (w-z)(w-y)(w-x)(z-y)(z-x)(y-x)$$

$$\rho_{X,Y} = \frac{\operatorname{E}[(X - \mu_X)(Y - \mu_Y)]}{\sigma_X \sigma_Y} = \sqrt{1 - \rho^2}$$