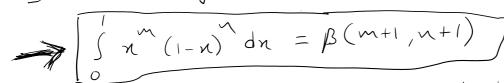
Beta function properties

Def . The function of man (m,n > 0) defined by the integral J'n m-1 (1-n) dn is called Beta function.

It is denoted by $\beta(m,n)$, $\beta(m,n) = \int_{-\infty}^{\infty} n^{m-1} (1-n)^{m-1} dn$



Properties of Beta function

 $\beta(m,n) = \beta(n,m)$

The relation bet Betal Gamas

3) Second form of Beta f $\beta(m,n) = 2 \int \sin^{2m-1} \alpha \cos^{2m-1} \alpha d\alpha$

 $\int_{-\infty}^{\infty} \sin^{2} \cos^{2} \cos \frac{1}{2} d\theta = \frac{1}{2} \beta \left(\frac{p+1}{2}, \frac{q+1}{2} \right)$

(2m-1=P) b) det of Beta for

 $\int_{0}^{\infty} \frac{x^{m-1}}{(1+x)^{m+n}} dx = \beta(m,n)$

5 det (toom) of Betaty

 $\int_{1}^{\infty} \frac{n^{m}}{(1+n)^{m}} dn = \beta(m+1, n-m-1)$

Short explanat":

B(m,n) = { n - (1-n) n - 1 dn

t=1-n : ot=-on 101 $= \int ((-t)^{m-1} t^{m-1} (-dt) = B(u,m)$

3) $\beta(m,n) = \int_{-\infty}^{\infty} \frac{1}{(1-n)^{n-1}} dn$

x = Sin2 v , 1-x = 1- Sin2 = cos2 v

dn = 2 SinoGsa da

 $\overline{I} = \int_{0}^{\pi/2} \sin^{2}\alpha \cos^{2}\alpha \cos^$ = 2 5 sin a cos a de

(1) 1/2 (tan v) 2 tan v Seconda

$$\begin{array}{c} \frac{1}{5} \left(\frac{1+n}{5}\right) \\ \frac{1}{5} \left(\frac{x^{n-1}}{(a+bn)^{n+n}} dx \right) \\ \frac{1}{5} \left(\frac{x^{n-1}}{(a+bn)^{n+n}} dx \right) \\ \frac{1}{5} \left(\frac{1-p}{1-p} - \frac{\pi}{5\ln p\pi}\right) \\ \frac{1}{5} \left(\frac{1-p}{1-p} - \frac{\pi}{5\ln p\pi}\right) \\ \frac{1}{5} \left(\frac{1-p}{4} - \frac{\pi}{4}\right) \\ \frac{1}{5} \left(\frac{1$$

$$\begin{bmatrix}
\frac{5}{4} & \frac{7}{4} & = \frac{1}{2^{2m-1}} & \frac{1}{1} & \frac{$$