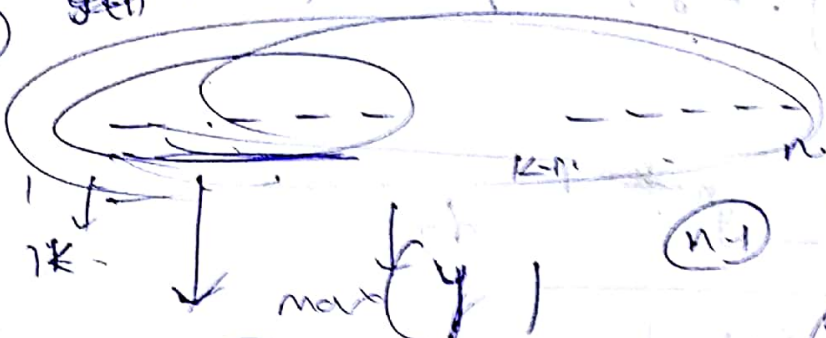
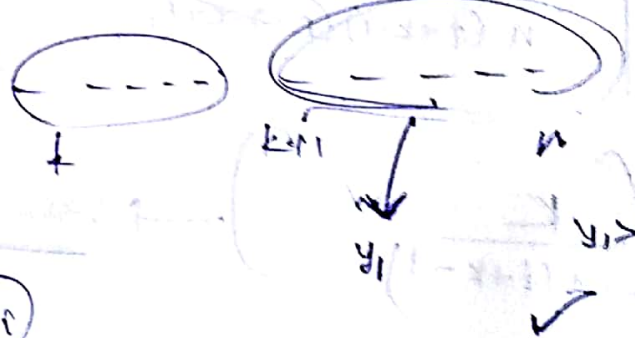

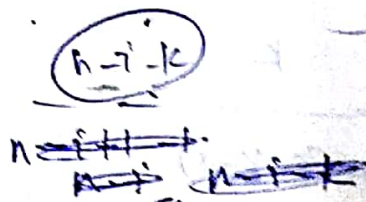


(b)  $y \in q(n, k)$   
  
 $\int_0^1 (k_1) \cdot dy \cdot (y)^{n-1}$   
 $\Rightarrow (k_1) \cdot \left( \frac{y^n}{n} \right)_0^1 = \frac{k}{n}$

(n-1)  $\begin{cases} x_k \geq y \\ P(x_k < y) = y \end{cases}$

(c)  $P(n, k)$



$\Rightarrow y \rightarrow (k+1)^{th}$   $n \in 1, (n-k)$   



$i = j+1 + n = n-k$   
 $x = n-i-k$

$$\begin{array}{ccc} \textcircled{< y_0} & (k+1) & \textcircled{n-i-k} \\ y_1 & y_1 & \downarrow < y_1 \end{array}$$

$$\int_{y_0}^{y_1} (y)^{k+1} (dy) \cdot (y_1)^{n-i-k}$$

$$\Rightarrow y^{k+1} \int_{y_0}^{y_1} y^{n-i-k} dy$$

$$y^{k+1} \left( \frac{y^{n-i-k+1}}{n-i-k+1} \right) \Big|_{y_0}^{y_1}$$

$$\frac{y_1^{k+1} - y_0^{k+1}}{n-i-k+1}$$

$$\frac{y^{k+1} - y^{n-k}}{n-i-k+1}$$

$$\Rightarrow \int \left( \frac{y^{i-1} - y^{n-k}}{n-k-i+1} \right) \cdot K y^{(k-1)} dy$$

$$K \int_0^1 \frac{y^{i+k-2} - y^{n-k}}{(n-k-i+1)} dy$$

$$K \left( \frac{\frac{y^{i+k-1}}{i+k-1} - \frac{y^{n-k+1}}{n-k+1}}{n-k-i+1} \right)$$

$$\Rightarrow K \left( \frac{\frac{n-i-k+1}{n(i+k-1)(n-i-k+1)}}{n-k-i+1} \right)$$

$$\begin{matrix} n-k \\ \uparrow \\ \text{zigzag} \\ i=n \end{matrix}$$

$$\left( \frac{K}{n(i+k-1)} \right) \rightarrow \text{value}$$

losing

$$1 - \sum_{i=1}^{n-k} \frac{K}{n(i+k-1)} \rightarrow$$

$$\left( 1 - \sum_{i=1}^{n-k} \frac{K}{n(i+k-1)} \right) \rightarrow \frac{K}{n}$$

$$\rightarrow P(n, k)$$