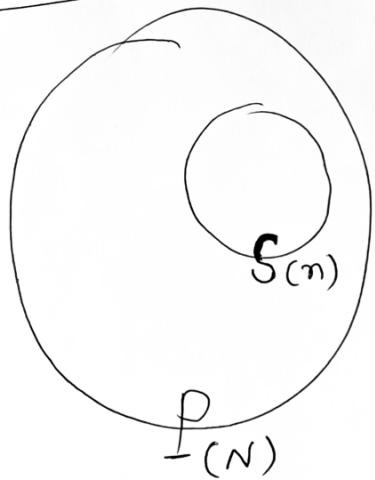


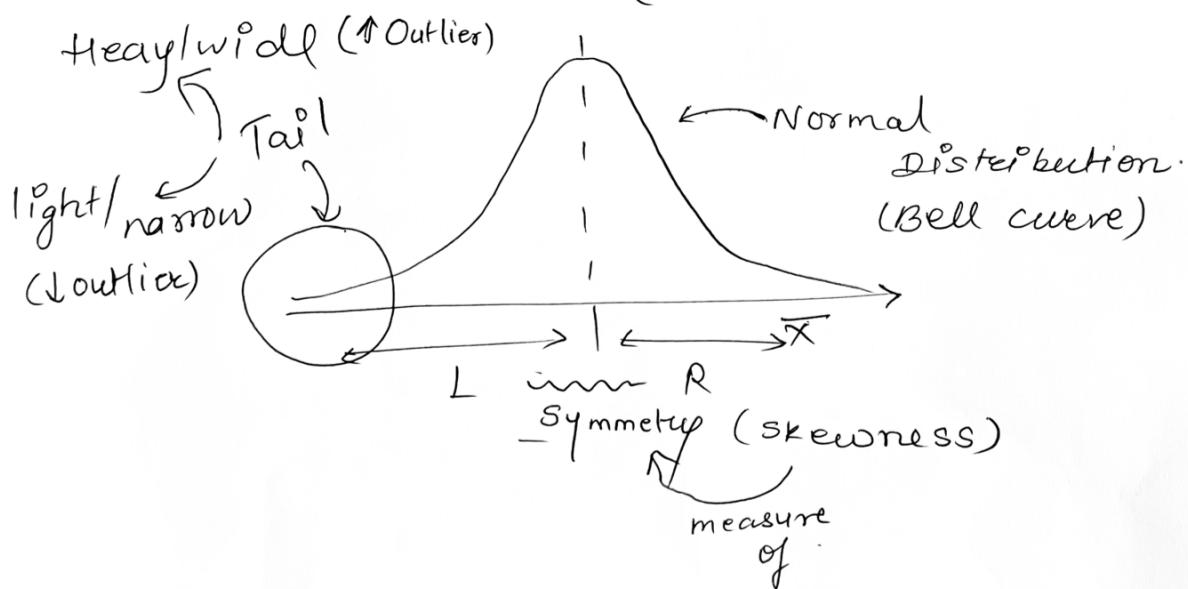
CLT



Sample size
 $(n) \geq 30$

$$S_1 = \{ \quad \} \Rightarrow \bar{x}_1$$
$$S_2 = \{ \quad \} \Rightarrow \bar{x}_2$$
$$\vdots$$

$$S_m = \{ \quad \} \Rightarrow \bar{x}_m$$



• Inverse of Matrix

$$A^{-1} = \frac{\text{Adj}(A)}{|A|} \rightarrow \begin{array}{l} \text{Adjoint of } A \\ |A| \rightarrow \text{Determinant of } A \end{array}$$

* Adjoint of A

- Minor
- Cofactor Matrix
- Transpose.

Eg:- $A = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 2 & 9 \end{pmatrix}$

$$\begin{aligned} |A| &= (1)[45 - 12] - (2)[36 - 42] + (3)[8 - 35] \\ &= \underline{-36} \end{aligned}$$

$$\begin{aligned} M_{1,1} &= \det \begin{vmatrix} 5 & 6 \\ 2 & 9 \end{vmatrix} & M_{1,2} &= \det \begin{vmatrix} 4 & 6 \\ 7 & 9 \end{vmatrix} & M_{1,3} &= \det \begin{vmatrix} 4 & 5 \\ 7 & 2 \end{vmatrix} \\ &= 33 & &= -6 & &= -27 \end{aligned}$$

$$\begin{aligned} M_{2,1} &= \det \begin{vmatrix} 2 & 3 \\ 2 & 9 \end{vmatrix} & M_{2,2} &= \det \begin{vmatrix} 1 & 3 \\ 7 & 9 \end{vmatrix} & M_{2,3} &= \det \begin{vmatrix} 1 & 2 \\ 7 & 2 \end{vmatrix} \\ &= 12 & &= -12 & &= -12 \end{aligned}$$

$$\begin{aligned} M_{3,1} &= \det \begin{vmatrix} 2 & 3 \\ 5 & 6 \end{vmatrix} & M_{3,2} &= \det \begin{vmatrix} 1 & 3 \\ 4 & 6 \end{vmatrix} & M_{3,3} &= \det \begin{vmatrix} 1 & 2 \\ 4 & 5 \end{vmatrix} \\ &= -3 & &= -6 & &= -3 \end{aligned}$$

Cofactor: - $(-1)^{i+j} M_{ij}$

$$M_{1,1} = (-1)^{1+1} \times 33 = \underline{33}$$

$$C' = \begin{pmatrix} 33 & 6 & -27 \\ -12 & -12 & 12 \\ -3 & 6 & -3 \end{pmatrix} \xrightarrow{\text{Transpose}} \begin{pmatrix} 33 & -12 & -3 \\ 6 & -12 & 6 \\ -27 & 12 & -3 \end{pmatrix}$$

$$A^{-1} = \frac{1}{-36} \begin{pmatrix} 33 & -12 & -3 \\ 6 & -12 & 6 \\ -27 & 12 & -3 \end{pmatrix}$$