Trace of Matrix

In a square matrix, the sum of elements of the principal diagonal is called the 'trace of a matrix'. We denote the trace of matrix A by 'tr A'.

Example :-

$$\text{If } A = \begin{bmatrix} 1 & 1 & 4 \\ 2 & 6 & 7 \\ 0 & 4 & 5 \end{bmatrix}$$

Then trace $A = 1 + 6 + 5 = 12$

Example

$$A = \begin{bmatrix} 1 & 1 & 1 & 0 \\ 0 & 2 & 3 & 0 \\ 2 & 1 & 5 & 1 \\ 4 & 0 & 7 & -1 \end{bmatrix}$$

$$tr(A) = A_{11} + A_{22} + A_{33} + A_{44}$$
$$= 1 + 2 + 5 - 1$$
$$= 7$$