

$a = \begin{bmatrix} [1, 2, 3], \\ [4, 5, 6], \\ [7, 8, 9], \\ [10, 11, 12] \end{bmatrix}$

$\text{len}(a) = \text{number of rows} = 4$

$\text{len}(a[0]) = \text{number of columns} = 3$

Transpose

$a = \begin{bmatrix} [1, 4, 7, 10] \\ [2, 5, 8, 11] \\ [3, 6, 9, 12] \end{bmatrix}$
 transpose
 (rows \rightarrow cols
 and
 cols \rightarrow rows)

$\begin{bmatrix} [1, 2, 3, 4], \\ [5, 6, 7, 8], \\ [9, 10, 11, 12] \end{bmatrix}$

$\begin{bmatrix} [1, 2, 3, 4], \\ [5, 6, 7, 8], \\ [9, 10, 11, 12] \end{bmatrix}$

$\begin{bmatrix} [1, 2, 3, 4], \\ [5, 6, 7, 8], \\ [9, 10, 11, 12] \end{bmatrix}$

array([[0, 1, 2, 3, 4, 5, 6, 7],
 [8, 9, 10, 11, 12, 13, 14, 15],
 [16, 17, 18, 19, 20, 21, 22, 23],
 [24, 25, 26, 27, 28, 29, 30, 31],
 [32, 33, 34, 35, 36, 37, 38, 39],
 [40, 41, 42, 43, 44, 45, 46, 47],
 [48, 49, 50, 51, 52, 53, 54, 55],
 [56, 57, 58, 59, 60, 61, 62, 63]])

→ test $\left[\underbrace{3:7:2}_{[3,5]}, \underbrace{1:6:3}_{[1,4]} \right]$

axis = 0

$\left[\begin{array}{c} [1, 2, 3, 4] \\ [5, 6, 7, 8] \\ [9, 10, 11, 12] \end{array} \right]$

$\left[\begin{array}{c} [1, 2, 3, 4] \\ [5, 6, 7, 8] \\ [9, 10, 11, 12] \end{array} \right]$

→ axis = 1