

VECTORS AND MATRICES



quicksheets

The submatrix function

submatrix(A, ir, jr, ic, jc): Returns the matrix consisting of rows ir through jr and columns ic through jc of array A.

Arguments:

- A, B, C, ... are arrays having the same number of rows for augment, or the same number of columns for stack.
- ir, jr are the integer upper and lower indices of the rows to be extracted.
- ic, jc are the integer upper and lower indices of the columns to be extracted.

Extracting a Submatrix

This QuickSheet illustrates the use of the **submatrix** function.

Input matrix: $M := \begin{pmatrix} 1 & 7 & 1 & 4 & 4 \\ -5 & -8 & -2 & 3 & 3 \\ -6 & -9 & -3 & 2 & 3 \\ 1 & 2 & 3 & 4 & 3 \\ 4 & 5 & 5 & 6 & 8 \end{pmatrix}$

Extract all elements common to both rows 1 and 2 and columns 0, 1, and 2:

$$\text{submatrix}(M, 1, 2, 0, 2) = \begin{pmatrix} -5 & -8 & -2 \\ -6 & -9 & -3 \end{pmatrix}$$

Swapping the last two arguments reverses the order of the columns:

$$\text{submatrix}(M, 1, 2, 2, 0) = \begin{pmatrix} -2 & -8 & -5 \\ -3 & -9 & -6 \end{pmatrix}$$

Swapping the first two scalar arguments reverses the order of the rows:

$$\text{submatrix}(M, 2, 1, 2, 0) = \begin{pmatrix} -3 & -9 & -6 \\ -2 & -8 & -5 \end{pmatrix}$$

You can also use the picture operator to extract pieces of an array visually.
