



**Definition**

Suppose  $A \in \mathbf{R}^{m \times n}$ . Given sets  $I \subset \{1, \dots, n\}$  and  $J \subset \{1, \dots, m\}$ , the submatrix of  $A$  at indices  $I$  and  $J$  is the matrix whose elements are the  $I \times J$  elements of  $A$  in order.

**Notation**

We denote the submatrix by  $A_{I,J}$



