



Math for the people, by the people.

## square matrix

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A *square matrix* has the same number of rows as columns.

Examples:

$$1. \begin{pmatrix} 1.00000 & 0.50000 & 0.33333 & 0.25000 \\ 0.50000 & 0.33333 & 0.25000 & 0.20000 \\ 0.33333 & 0.25000 & 0.20000 & 0.16667 \\ 0.25000 & 0.20000 & 0.16667 & 0.14286 \end{pmatrix}$$

$$2. (1)$$

$$3. \begin{pmatrix} 0.94 & 0.37 & 0.71 & 0.32 & 0.58 \\ 0.90 & 0.16 & 0.74 & 0.83 & 0.27 \\ 0.50 & 0.03 & 0.07 & 0.49 & 0.55 \\ 0.15 & 0.59 & 0.43 & 0.03 & 0.76 \\ 0.04 & 0.64 & 0.61 & 0.17 & 0.29 \end{pmatrix}$$

$$4. \begin{pmatrix} 89 & 38 & 50 \\ 64 & 26 & 98 \\ 40 & 96 & 83 \end{pmatrix}$$

The notation  $\text{Mat}_n(\mathbb{K})$  is often used to signify the set of square matrices which are of order  $n$  (size  $n \times n$ ) with elements drawn from a field  $\mathbb{K}$ . Thus, one would use  $a \in \text{Mat}_3(\mathbb{C})$  to declare that  $a$  is a three-by-three matrix with elements that are complex numbers.

**Property:** Suppose  $A$  and  $B$  are matrices such that  $AB$  is a square matrix. Then the product  $BA$  is defined and also a square matrix.