



## Definition

An *orthonormal* (or *orthogonal*) matrix is a matrix whose columns are an orthonormal family of vectors.

Some authors call these *real orthogonal* or *unitary* matrices.

## Notation

Let  $A \in \mathbf{F}^{m \times n}$ . Something something

$$AA^{\top} = I.$$

## Characterizations

**Proposition 1.** *A matrix is orthonormal if and only if its transpose product with the matrix is the identity.*

**Proposition 2.** *A matrix is orthonormal if and only if its transpose is orthonormal.*



