Title of the handout

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Orhogonal matrices

Definition 1 (Orthonormal vectors)**.** The vectors $q_1, q_2, \ldots q_n$ are *orthonormal* if:

$$q_i^T q_j = \begin{cases} 0 & \text{if } i \neq j, \\ 1 & \text{if } i = j. \end{cases}$$

Remark 1 (Orthogonal matrix)*.* If the columns of $[q_1 \ldots q_n]$ are *orthonormal*, then $Q^T Q = I$. A matrix with orthonormal columns is called an *orthonormal matrix* and if the matrix is square it is called an *orthogonal matrix*. Then $Q^T = Q^{-1}$.