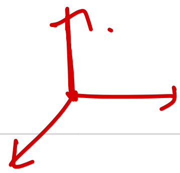

$(f_1, \dots, f_k)$ k vectors in $\mathbb{R}^n$. Then.

$\alpha_1 f_1 + \alpha_2 f_2 + \dots + \alpha_k f_k$ → forms a subspace of $\mathbb{R}^n$.

∴ this subspace the span of $(f_1, \dots, f_k)$.

subspace is formed in this way.

The span of any set of vectors in $\mathbb{R}^n$ is a subspace of $\mathbb{R}^n$ → this is spanning set

every nontrivial subspace has many spanning sets

$F_1, \cdots, F_k$ be nonzero mutually orthogonal vectors in $\mathbb{R}^n$.

then $F_1, \cdots, F_k$ are linearly independent

basis for the subspace S of $\mathbb{R}^n$ to be a set

of vectors that spans S and is

linearly independent

linearly dependent

Suppose $V_1, \cdots, V_k$ span a subspace S of $\mathbb{R}^n$.

let $G_1, \cdots, G_t$ be a basis for S.

linearly independent then $\boxed{t \le k}$

number of vectors in a basis for a subspace S of $\mathbb{R}^n$ is called the dimension of S. Example 16)

subspace of $\mathbb{R}^3$ has dimension 2.

basis is consists of
mutually orthogonal vector $\longrightarrow$ basis is an orthogonal basis

and unit $\longrightarrow$ orthonormal