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**Linear combinations and the general solution.**

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Summary: In this approach, a linear combination of orthogonal vectors, i.e., particular solutions that only depend of the coefficients of the linear equation, is defined as a vector. This definition implies that the general solution of one linear equation is the set of all vectors. It also defines the inner product and the norm based on an algebraic analysis of the equation coefficients and the unknowns. They define together a criterion to determine when two orthogonal vectors (vectors) are not scalar multiple of each other, that is necessary to determine if the general solution is complete or not for the case of three unknowns.

*Classification:* H60

*Keywords:* linear combinations; general solution; orthogonality

<http://www.pphmj.com/abstract/9408.htm>