where the terms represented by $\cdots$ are of degree less than $k-i+2$ in y. Thus (2) is established for $k+1$ and hence by induction for $k\geqq n-1$. Hence $p_1^{(k)}, p_2^{(k)}, \cdots, p_n^{(k)}$ are linearly independent for $k\geqq n-1$.

We have now proved that, for every k, every linear homogeneous polynomial of degree k which is a solution of $Of=0$ has the form

$$c_1p_1^{(k)} + c_2p_2^{(k)} + \cdots + c_np_n^{(k)},$$

where the c's are arbitrary constants.

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A CHARACTERIZATION OF NULL SYSTEMS IN PROJECTIVE SPACE

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1. *Introduction.* We consider the n-dimensional projective space S_n defined analytically by means of any abstract field F. The points P of S_n are given by a set of $n+1$ elements x_i of F, $P=(x_0, x_1, \cdots, x_n)$, (not all $x_i=0$), with the convention that proportional sets define the same point. The points P whose coordinates satisfy a linear homogeneous equation $u^{(0)}x_0+u^{(1)}x_1+\cdots+u^{(n)}x_n=0$, (not all $u^{(i)}=0$), form a hyperplane $\epsilon=(u^{(0)}, u^{(1)}, \cdots, u^{(n)})$. There is no difficulty in defining such notions as those of straight lines, projections, and cross ratios, and discussing the elementary properties.

Let M be a non-singular skew-symmetric bilinear form with coefficients a_{ik} in F,

$$M = \sum_{i,k=0}^{n} a_{ik}y_ix_k, \qquad a_{ik} = -a_{ki}, \qquad \det(a_{ik}) \neq 0.$$

For every point $P=(x_0, x_1, \cdots, x_n)$ the equation $M=0$ is the equation of a hyperplane ϵ in the coordinates $(y_0, y_1, \cdots, y_n)$ of a variable point of ϵ. We obtain in this manner a one-to-one correspondence between the points $P=(x_0, x_1, \cdots, x_n)$ and hyperplanes $\epsilon=(u^{(0)}, u^{(1)}, \cdots, u^{(n)})$ of S_n which is called a *null system*. The relation between corresponding values of the $u^{(i)}$ and x_i is given by