and

$$(5) \qquad v_i(x) = \sum_{k=1}^{i} B_{ik} w_k(x).$$

Since $B_{ik} \leqq \{\sum_{j=1}^{\infty} B_{jk}^2\}^{1/2} = l_{i-1,k}$, in all the cases of the ratio function $r(x)$ considered, the right-hand members of (4) and (5) are absolutely convergent and bounded, wherever, respectively, the v's and w's are bounded. Hence, if conditions are such that the right-hand member of (4) converges to the value of the left-hand member and if a set of points is known for which the v's are bounded, then the w's are bounded on the same set except where $r(x)=0$. Similarly, boundedness of the w's leads through (5) to results on the boundedness of the v's.

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A MAPPING CHARACTERIZATION OF PEANO SPACES

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The Hahn-Mazurkiewicz theorem states that any Peano space (compact, connected, locally connected, metric space) is a continuous image of the interval $0 \leqq t \leqq 1$, and conversely. Clearly, the mapping function is not uniquely determined. If the Peano space $\mathfrak{M}$ has special topological properties, the mapping may be selected in a simpler fashion than might be expected generally. On the other hand, special properties of $\mathfrak{M}$ may impose certain necessary restrictions on the mapping. For example, if $\mathfrak{M}$ is a regular continuum in the sense of Menger, then, by a theorem due to Nöbeling,[1] there is a continuous mapping f of the circle[2] onto $\mathfrak{M}$ such that each point of finite order is covered by the mapping a number of times which does not exceed the order of the point. That is, if $o(x)$ is the order of the point x and $m(x)$ is the number of points in $f^{-1}(x)$, then $m(x) \leqq o(x)$ for each point for which $o(x)$ is finite. On the other hand, if $\mathfrak{M}$ is of dimension n, then *any* continuous mapping of a 1-dimensional compact set onto $\mathfrak{M}$,

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[1] G. Nöbeling, *Reguläre Kurven als Bilder der Kreislinie*, Fundamenta Mathematicae, vol. 20 (1933), pp. 30–46.

[2] The interval may be used instead of the circle if we make $f(0)=f(1)$ and count inverses on $0 \leqq t < 1$.