position fields coincide and are cyclic. The field $\bar{L}$ is then equivalent to a subfield of $\bar{K}'$; without loss of generality we may suppose $\bar{K}' > \bar{L} \geqq \bar{K}$. The degree $[\bar{L}:\bar{K}] = \bar{m}$ is a divisor of m. Consequently $[Z_n\bar{L}:\bar{K}] = [Z_n\bar{L}:\bar{L}][\bar{L}:\bar{K}] = n\bar{m}$. By the Galois theory there is then for every integer n an extension Z_n^* of degree n over $\bar{K}$. The defining equation $f^*(x) = 0$ of $Z_n^*/\bar{K}$ now may be approximated by an irreducible equation $f(x) = 0$ of degree n with coefficients in K so that Z_n^* is generated by the roots of $f(x) = 0$. The root field of $f(x) = 0$ over K is the cyclic extension Z_n' of degree n over K. Hence $Z_n^* = Z_n'\bar{K}$ for all n, contrary to the assumption that K is not relatively complete with respect to any rank one valuation.

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A DIFFERENTIAL GEOMETRY PROBLEM USING TENSOR ANALYSIS

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1. **Introduction.** The problem at hand was worked out in attempting to apply tensors to a much more general problem in classical differential geometry. The results obtained in a general coordinate system reduce readily to classical results of Eisenhart. An interesting interpretation of Christoffel symbols appears.

2. ***R* net.** A rectilinear congruence in 3-space is called a W-congruence if the asymptotic lines on the two focal surfaces correspond. If the tangents to both families of curves of a conjugate net on a surface form W-congruences the net is called an R net.[1] We derive the analytic conditions that must obtain in order that a given conjugate net on a surface shall be an R net.

3. **Equations for an *R* net.** Let S_1 be one focal surface of a W-congruence, the vector equation of the surface being

$$\overset{\alpha}{z}_1 = \overset{\alpha}{z}_1(\overset{i}{x}), \qquad \alpha = 1, 2, 3;\ i = 1, 2. \tag{3.1}$$

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[1] Tzitzeica, Comptes Rendus de l'Académie des Sciences, Paris, vol. 152 (1911), p. 1077.