for constants a_i properly chosen. Conversely, for any choice of constants a_i any solution of (6.3) is a solution of (6.2). If (k, a_0) is in R and (4.3) and (4.4) are satisfied, it can be shown by applying Theorem 2.1 that equation (6.3) has a unique solution on some interval $[k, k+h]$ and that

$$y^{\alpha+i}(k) = a_i, \qquad i = 0, \cdots, p-2, \tag{6.4}$$

where $y^{\alpha+i}$ is the derivative of order $\alpha+i$. This leads to the following theorem:

THEOREM 6.1. *If β, α, p are numbers as described above, if $\phi(x, y)$ satisfies (4.3) and (4.4), and if $a_0, a_1, \cdots, a_{p-2}$ is any set of numbers with (k, a_0) in R, then the equation*

$$D_x^\beta y = \phi(x, y) \tag{6.5}$$

has a unique solution satisfying the initial conditions (6.4).

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NOTE ON INTEGRABILITY CONDITIONS OF IMPLICIT DIFFERENTIAL EQUATIONS*

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The Riquier† theory for computing the integrability conditions of a system of partial differential equations of arbitrary order but in a special form gives a precise method for calculating these conditions without repetitions and for obtaining the initial determinations of the solutions. These general arguments imply a corresponding theorem for implicit systems of equations. It is the purpose of the present note to state that theorem and to point out that it is a consequence of the general theory. All references will be to the Janet exposition.

Let F^k, $(k=1, 2, \cdots, m)$, represent a system of differential equa-

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† C. Riquier, *Les Systèmes d'Équations aux Dérivées Partielles*, Paris, 1910. M. Janet, *Les systèmes d'équations aux dérivées partielles*, Journal de Mathématiques, (8), vol. 3 (1920), pp. 65–151. J. M. Thomas, *Riquier's existence theorems*, Annals of Mathematics, vol. 30 (1929), pp. 285–310. J. F. Ritt, American Mathematical Society Colloquium Publications, vol. 14, chap. 9.