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A note on the R. Fuchs's problem for the Painlevé equations

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In this article we consider a first-order completely integrable system of partial differential equations $\frac{\partial \Phi}{\partial x} = A(x, t) \Phi$, $\frac{\partial \Phi}{\partial t} = B(x, t) \Phi$ with $\Phi = (\phi_1, \phi_2)^\tau$ where $A(x, t)$ and $B(x, t)$ are 2 by 2 holomorphic matrices functions. Under some assumptions we find a variable change by which the system $\frac{\partial \Phi}{\partial x} = A(x, t) \Phi$ is reduced to an equation independent on the variable t . As an application we show that the R. Fuchs's conjecture for the Painlevé equations is true for some algebraic solutions.

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