Gorbuzov, V. N.; Pablyuchik, P. B.
On the solutions, integrals and limit cycles of $n$-Darboux’s system. (Russian. English summary) [Zbl 1467.34092]

Summary: For differential Darboux’s system
\[ \frac{dw}{dz} = [a(z) + M(z, w)E]w^T, \]
where $a(z) = \|a_{ij}(z)\|$, $n \geq 2$, $E$ is identity matrix, $a_{ij}$ a complex holomorphic functions, $M(w, z)$ homogeneous function of degree $\rho$ of $w$ with coefficients which are holomorphic functions of $z$ the questions of the integrability and the absence of movable critical singular points of its solutions are considered. In case of autonomous Darboux’s system it is fulfilled the building of the first integrals and last Jacobi’s multiplier on the base of which general integral is constructed. Also the theorems of quantity and the algebraicity of limit cycles are proved.

MSC:
34M04 Nonlinear ordinary differential equations and systems in the complex domain
34M35 Singularities, monodromy and local behavior of solutions to ordinary differential equations in the complex domain, normal forms
34A05 Explicit solutions, first integrals of ordinary differential equations
34C05 Topological structure of integral curves, singular points, limit cycles of ordinary differential equations

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