



Exact Solutions > Ordinary Differential Equations > First-Order Ordinary Differential Equations > Riccati Equation, Special Case 12

$$18. \quad y'_x = f(x)y^2 - ae^{\lambda x}f(x)y + a\lambda e^{\lambda x}.$$

Riccati equation, special case 12.

Particular solution: $y_0 = ae^{\lambda x}$.

The general solution can be written as:

$$y = ae^{\lambda x} + \Phi(x) \left[C - \int f(x)\Phi(x) dx \right]^{-1}, \quad \text{where } \Phi(x) = \exp \left[a \int e^{\lambda x} f(x) dx \right],$$

C is an arbitrary constant.

Reference

Polyanin, A. D. and Zaitsev, V. F., *Handbook of Exact Solutions for Ordinary Differential Equations, 2nd Edition*, Chapman & Hall/CRC, Boca Raton, 2003.

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