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15. 
$$y'_x = f(x)y^2 + g(x)y - a^2f(x) - ag(x)$$
.

Riccati equation, special case 9.

Particular solution:  $y_0 = a$ .

The general solution can be written as:

$$y = a + \Phi(x) \left[ C - \int f(x) \Phi(x) dx \right]^{-1}, \text{ where } \Phi(x) = \exp \left\{ \int \left[ 2af(x) + g(x) \right] dx \right\},$$

 ${\cal C}$  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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