2. $y^{\lambda}(x)y(a-x) = f(x)$.

This is a special case of equation 2, Subsection 2.3.

Solution:

$$y(x) = \left[f(x)\right]^{-\frac{\lambda}{1-\lambda^2}} \left[f(a-x)\right]^{\frac{1}{1-\lambda^2}}.$$

Reference

Polyanin, A. D. and Manzhirov, A. V., *Handbook of Integral Equations: Exact Solutions (Supplement. Some Functional Equations)* [in Russian], Faktorial, Moscow, 1998.