

7.
$$y^{\lambda}(x)y\left(\frac{bx+\beta}{a-x}\right)=f(x), \qquad \beta=a^2+ab+b^2.$$

This is a special case of equation 13, Subsection 2.3.

Reference

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

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