

30.
$$y(x) - cy\left(\frac{a-x}{1+bx}\right) = f(x), \qquad c \neq \pm 1.$$

Solution:

$$y(x) = \frac{1}{1 - c^2} f(x) + \frac{c}{1 - c^2} f\left(\frac{a - x}{1 + bx}\right).$$

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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http://eqworld.ipmnet.ru/en/solutions/fe/fe1130.pdf