

16. y(x) + y(a - x) = f(x).

Here, the function f(x) is assumed to satisfy the condition f(x) = f(a - x). Solution:

$$y(x) = \frac{1}{2}f(x) + \Phi(x, a - x),$$

where  $\Phi(x, z) = -\Phi(z, x)$  is any antisymmetric function with two arguments.

Particular solutions:

$$y(x) = f(x)\sin^2\left(\frac{\pi x}{2a}\right),$$
$$y(x) = f(x)\cos^2\left(\frac{\pi x}{2a}\right).$$

## Reference

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

Copyright © 2004 Andrei D. Polyanin

http://eqworld.ipmnet.ru/en/solutions/fe/fe1116.pdf