



**39.**  $y(x) + y(\sqrt{a^2 - x^2}) = f(x), \quad 0 \leq x \leq a.$

The function  $f(x)$  is assumed to satisfy the condition  $f(x) = f(\sqrt{a^2 - x^2})$ .

Solution:

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

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

### References

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