22. $y(x)y\big(\omega(x)\big) = f^2(x)$, **where** $\omega\big(\omega(x)\big) = x$.

The right-hand side function is assumed to satisfy the condition $f(x) = \pm f\big(\omega(x)\big)$. To be specific, we take $f(x) = f\big(\omega(x)\big)$.

Solution:

$$y(x) = \pm f(x)\exp\big[\Phi\big(x,\,\omega(x)\big)\big],$$

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

Reference

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

