

45. $y(\sin x) + y(\cos x) = f(x)$.

The function f(x) is assumed to satisfy the condition $f(x) = f(\frac{\pi}{2} - x)$. Solution in implicit form:

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

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.

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