



4. $f(x + y) + f(x - y) = 2f(x) \cosh y.$

Solution:

$$f(x) = C_1 e^x + C_2 e^{-x},$$

where C_1 and C_2 are arbitrary constants.

References

Aczél, J. and Dhombres, J., *Functional Equations in Several Variables*, Cambridge Univ. Press, Cambridge, 1989.

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