



Exact Solutions > Functional Equations > Linear Functional Equations with Several Independent Variables > Cauchy Equation (Cauchy Functional Equation)

1. $f(x + y) = f(x) + f(y)$.

Cauchy equation.

Solution:

$$f(x) = Cx,$$

where C is an arbitrary constant.

References

- Fikhtengol'ts, G. M.**, *A Course of Differential and Integral Calculus, Vol. 1* [in Russian], Nauka, Moscow, 1969 (pages 157, 158).
- 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.

Cauchy Equation