



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

2.  $f(xy) = f(x) + f(y)$ .

**Logarithmic Cauchy equation.**

Solution:

$$f(x) = C \ln x,$$

where  $C$  is an arbitrary constant.

### References

*Mathematical Encyclopedia, Vol. 5* [in Russian], Sovetskaya Entsiklopediya, Moscow, 1985 (pages 699, 700).

**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.

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