



Exact Solutions > Functional Equations > Linear Functional Equations with Several Independent Variables > Gauss Equation

6. $f(\sqrt{x^2 + y^2}) = f(x)f(y)$.

Gauss equation.

Solution:

$$f(x) = \exp(Cx^2),$$

where C is an arbitrary constant (it can be complex).

Reference

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

Gauss Equation

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<http://eqworld.ipmnet.ru/en/solutions/fe/fe3106.pdf>