

6. f(x)g(y) = h(x + y).

Here, f(x), g(y), and h(z) are unknown functions. Solution:

$$f(x) = C_1 \exp(C_3 x),$$
 $g(y) = C_2 \exp(C_3 y),$ $h(z) = C_1 C_2 \exp(C_3 z),$

where C_1 , C_2 , and C_3 are arbitrary constants.

Reference

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

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http://eqworld.ipmnet.ru/en/solutions/fe/fe4106.pdf