

First-Order Partial Differential Equations > Linear Equations > Section 1.2

12. 
$$f(x)\frac{\partial w}{\partial x} + g(y)\frac{\partial w}{\partial y} = h_1(x) + h_2(y)$$
.

General solution:

$$w = \int \frac{h_1(x)}{f(x)} dx + \int \frac{h_2(y)}{g(y)} dy + \Phi \left( \int \frac{dx}{f(x)} - \int \frac{dy}{g(y)} \right),$$

where  $\Phi(u)$  is an arbitrary function.

## Reference

Polyanin, A. D., Zaitsev, V. F., and Moussiaux, A., Handbook of First Order Partial Differential Equations, Taylor & Francis, London, 2002.

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http://eqworld.ipmnet.ru/en/solutions/fpde/fpde1212.pdf