

First-Order Partial Differential Equations > Linear Equations > Section 1.1

$$6. \quad \left[e^{\alpha x}f(y)+c\beta\right]\frac{\partial w}{\partial x}-\left[e^{\beta y}g(x)+c\alpha\right]\frac{\partial w}{\partial y}=0.$$

- 1°. Principal integral: $\Xi = \int e^{-\beta y} f(y) dy + \int e^{-\alpha x} g(x) dx ce^{-\alpha x \beta y}$.
- 2° . General solution: $w = \Phi(\Xi)$, where $\Phi(\Xi)$ 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/fpde1106.pdf