

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

5.
$$\left[f(y) + amx^ny^{m-1}\right]\frac{\partial w}{\partial x} - \left[g(x) + anx^{n-1}y^m\right]\frac{\partial w}{\partial y} = 0$$
.

1°. Principal integral:
$$\Xi = \int f(y) dy + \int g(x) dx + ax^n y^m$$
.

 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/fpde1105.pdf