

First-Order Partial Differential Equations > Quasilinear Equations > Section 2.3

11. 
$$\frac{\partial w}{\partial x} + f(x, w) \frac{\partial w}{\partial y} = g(w)$$
.

General solution:

$$y = \int_{w_0}^{w} \frac{f(G(t) - G(w) + x, t)}{g(t)} dt + \Phi(x - G(w)),$$

where  $G(w) = \int \frac{dw}{g(w)}$  and  $\Phi(u)$  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/fpde2311.pdf