

First-Order Partial Differential Equations > Quasilinear Equations > Section 2.2

10.
$$\frac{\partial w}{\partial x} + f(x)g(y)h(w)\frac{\partial w}{\partial y} = 0.$$

General solution:

$$\int \frac{dy}{g(y)} - h(w) \int f(x) \, dx = \Phi(w),$$

where $\Phi(w)$ 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/fpde2210.pdf